Introduction

On the method of Studying Physic

As nothing contributes more to facilitate the study of any art or science than a regular systematic method of procedure, I shall make it the business of this Lecture to give you directions concerning the method of studying physic upon which you are now entering.

But before I proceed to the science of medicine itself I shall premise a few things as indispensably necessary to be previously understood in order to a person's entering upon the study of it with advantage & success. These are the learned languages & the liberal arts particularly the mathematics & experimental philosophy.

By the learned languages I mean the Greek & Latin. The Greek being the language in which the first improvers of medicine wrote, contains the original treasures of ancient medical science. The Latin contains all the wealth of more modern literature. It is the vehicle of knowlege in which the learned men of every nation in Europe choose to convey their sentiments & communicate their discoveries to the world. As it is best known of the dead languages it is chosen as the most proper one by the various nations of Europe for a medium of intercourse amongst the learned that is equally attainable by every one of them. Hence

it becomes indispensably necessary for a physician who is to derive his knowlege from so many different sources to be well acquainted with it.

The mathematics or at least many branches thereof are equally necessary to be understood by one who desires to be fully acquainted with medical literature. The most essential of these are Arithmetic both vulgar and decimal, Trigonometry & Geometry. For as the human body is constructed upon the nicest geometrical principles it is very evident that a just Idea of its structure & of the mechanism of its several parts cannot be obtained without a previous knowlege of these fundamental branches of the mathematics.

Experimental philosophy cannot be dispensed with in the study of physic since we can go but small lengths in natural or medical enquiries without its assistance. Mechanics, Hydraulics Hydrostatics Pneumatics & Optics are equally necessary to be understood by every student of the medical arts to which if we add some general acquaintance with Astronomy & (for the sake of reasoning with more clearness & precision as well as of comprehending the arguments of others more fully) an acquaintance with Logic a person may set out in the study of physic with the greatest advantage & may flatter himself that by means of a good genius & close application to study he will make great proficiency therein.

But as medicine is a science of great extent & comprehends ~~within~~ its so many different branches it is impossible to learn it thoroughly without following a regular method. Whilst this is neglected all our Ideas are but crude conceptions, a rope of sand without any firm connection. Should any one as chance or whim might direct sometimes apply himself to one branch, sometimes to another; or read indiscriminately even the best Authors on the different parts of medicine; for want of method all his knowlege would be superficial; though he might take as much pains as would suffice to make him eminently skilful had he from the beginning pursued a well concerted plan. To assist you therefore in your medical studies I shall now proceed to draw the outlines of a plan or method of studying Physic which I would recommend to you strictly to adhere to not doubting but you will be sensible of the good effects arising therefrom in the end though you may not possibly comprehend them at present.

*Galen defines medicine to be "scientia sanitatis protectrix, et morborum expultrix". According to the learned Gaubius "medicine is the guardian of life & health against death & disease". It includes a thorough know:ledge of the human fabric & animal oeconomy; what constitutes health; what are the diseases as well internal

* Lord Bacon says Medicina dividenda 1 Conservatio Sanitatis. 2 Curatio morborum. 3 Prolongatio Vitae.

or external to which the body is exposed; their seat causes & symptoms; ~~& the means of applying with skill~~ & address & judgment the various remedies (adapted to cure or mittigate them.

From this view of medicine we readily percieve its great extent & by carefully attending to the several parts of the definition are able to unfold its various branches & proper bounds.

As the human body is the proper object of medical enquiry it is evident that a knowlege of its structure is the first & fundamental branch of medical science, but the human body being a complex hydraulic machine a double enquiry must be made 1st Into the structure of its various parts which constitutes what is called <u>Anatomy</u>, and 2d. The uses of those parts their functions & the laws of their motion, this constitutes what is termed <u>Physiology</u>. But our medical studies are not to terminate here. Though a person be ever so well acquainted with the structure of the numerous parts of the human frame & their various uses & motions in health, yet if he be ignorant of the causes that may injure them and the diseases to w.h they are obnoxious, he will never be able to form any true Idea of the nature of a Disease, & when that is known unless he likewise understands the virtues of medicines & the proper method of administring them he can never know how to cure one Disorder in a right manner. A physician therefore must not only understand the structure of the human body & its motions & functions

in a healthy state, but also [illegible] happen in a morbid state, the [illegible]

Sennertus, Boerhaave & other systematic writers of the last century reduced the science of medicine to the five following heads.

1st Physiology containing a knowlege of the structure of the human body as well as of its various functions

2d Pathology comprehended the general doctrine of diseases, with their causes nature & differences.

3d Semiotics which teaches the Symptoms by which a disease is known.

4th Hygieinia which gives rules & directions for the preservation of health.

5th Therapeutics which teaches the method of curing diseases by Diet Surgery & Pharmacy.

This division however has been rejected by later writers who look upon it as too artificial. The following appears to me the most natural of any which reduces the various branches of medicine under six heads viz. Anatomy, Materia Medica, Chemistry, Physiology Pathology, Nosology.

Anatomy teaches us the knowlege of the structure & organization of the various parts of the human body. From this source we derive our first knowlege of the seat of diseases, of the proper or improper arrangement of parts & with it we begin the study of physic

constitutes a distinct branch of the healing art

Materia Medica treats of the natural history & medical virtues of all those bodies which are employed in diet or medicine. It considers the changes they undergo when applyd to the human body and the effects they produce on the system

As a just knowlege of the materia medica includes as well the natural as medical history of all its objects it is obvious that in order to a proper acquaintance with the materia medica we should first study natural history in general

By natural history is meant a knowlege of all natural bodies wch are generally included by naturalists under the three classes & kingdoms of vegetables, animals, and minerals. That branch of natural history which treats of vegetables is called Botany that which treats of animals Zoology & that which treats of minerals Minerology

Chemistry is that branch of natural philos.y which treats of the particular properties of bodies or accordingly to the language of Logicians Philosophy is the genus of which Chemistry is a species, being divided properly into two parts called the mechanical & chemical parts of philosophy, the former being conversant in the general the latter in the particular properties of bodies

Physiology teaches the uses of the several parts in the human body & of all the functions vital, animal and natural in a sound state. The illustrious Haller very properly denominates it animated anatomy. It is the application of Philosophy to Anatomy & may very well be defined "A philosophic knowlege of the human body". Anatomy in a more limited view considers the structure of the dead body only; but Physiology teaches the functions of the living body.

Pathology treats of the vital animal & natural functions in a morbid state, as Physiology does in a sound healthful condition. It traces out the seat of diseases, examines their causes & effects, shews their differences explains their symptoms &c. It is the immediate guide to practice & a very capital part of medical knowlege.

Physiology & Pathology constitute what is commonly termed the Theory of Physic or Medical Institutions

Nosology or as it is more commonly called the Practice of Physic is immediately conversant about diseases themselves, their specific difference, causes, symptoms and method of cure. It differs from the Theory of physic in descending to particulars whereas in the Theory general rules only are laid down. It consists in these two things 1st. In knowing every particular disease by its specific symptoms & 2d. In curing the disease when known by remedies properly adopted

This part therefore being evidently built upon all the pre-
-ceeding parts of physic & consequently presupposing a
knowledge of them is justly accounted the finishing part of
medicine as being the immediate application of them
to practice.

Medical Science is one whole, of which all the branches
I have enumerated are the several parts. They may be
considered as the links of a chain that have a mutual
connection with one another. Anatomy, Materia Medica
Chemistry & the medical Institutions or Physiology and
Pathology are only the ladder by which we are to mount
up to the temple of Aesculapius & there be initiated
into the practice of physic

functions in a healthy state, but also those appearances which happen in a morbid State, the virtues of medicines & the causs nature seat & & method of curing diseases & each of which constitute a distinct branch of the healing Art

Of Jurisprudence

Jurisprudence is a science which teaches the method of enacting & administring civil Laws in any state or society. The first thing to be considered in order to see upon what principles society is founded, is the state immediately previous to the social state. This is called a state of Nature. Violent and unnecessary controversies have been raised upon this subject. Some have denied that ever any such thing existed; that since there were men they have always been in a social state. This is so far true that in no example in fact could it ever last long; yet it is impossible to consider society as a voluntary union of particular persons without supposing these persons in a state somewhat different before this union took place. There are rights therefore belonging to a state of nature different from those of a social state, and different states

or societies independant are at this moment in a state of nature, or natural liberty with regard to each other. —— Another famous question has been raised, is the state of nature a state of war or peace? Hobbes an author of considerable note but of very illiberal sentiments in politics is a strenuous advocate for a state of nature being a state of war. Hutchinson & Shaftsbury plead strongly that a state of nature is a state of Society However opposite & hostile their sentiments seem to be with regard to each other, it seems no hard matter to reconcile them. That the principles of our nature lead to society; that our happiness & the improvement of our powers are only to be had in society is the most undoubted certainty; & that in our nature, as it is the work of God, there is a real good will & benevolence to others: but on the other hand our nature, as it is now, when free & independent is prone to injury and

consequently to war is equally manifest, and that in ~~a~~ a state of natural liberty there is no other way than force for preserving security & & repelling injury.

Some writers say that nature prompts to society, others that necessity obliges to it, both are equally true. Supposing then the state of natural liberty antecedent to society to be a reality, let us consider the perfect & imperfect rights belonging to that state, that we may see more distinctly why & how they differ in a social state. The perfect rights in a state of natural liberty are.

1 A right to life

2 A right to employ his faculties and industry to his own use.

3 A right to things that are common & necessary as air, water, earth,

4 A right to personal liberty

5 A power over his own life, not to throw it

away unnecessarily but for good reason

6 A right to private Judgment in matters of opinion

7 A right to associate if he so inclines with any person or persons whom he can persuade not force, under this is contained a right to marriage.

8 A right to character, that is to say, innocence not fame. It is easy to see that all these states belong to a state of natural liberty, and that it would be unjust & unequal to hinder or abridge another in any one of them without consent unless it be in just retaliation for injuries recieved

The imperfect rights are very numerous & are nearly the same in a state of nature as in a state of society, such as gratitude, compassion, mutual good offices; indeed they must be the same in a social & natural state, because the very definition of an imperfect right is such as you cannot use force to obtain in a state of

natural liberty, and human Laws in a well regulated state will not give you.

Society I would define to be an association or compact of any number of persons to deliver up or abridge some parts of their natural rights in order to have the strength of the remaining body to protect the remaining & to restore others. Hobbes & some other writers of the former age treat with contempt this which is generally called the social compact. He insists that monarchy is the law of nature. Few are of his sentiments now at least in Britain. From this view of society as a voluntary compact results this principle, that men are originally equal & consequently by nature free. Liberty either cannot or ought not to be given up in the social state; the end of union should be the protection of Liberty in a constituted Government. Some have doubted whether it is lawful to take away liberty from others for life, for a crime

committed. There can be no strong reason given against this, except that which is supposed to operate in Britain against making malefactors slaves, that it would be unfavourable to the spirit of natural liberty to see any rank of men enslaved; but setting this aside it seems plain that if men may forfeit their lives to society they may also forfeit their liberty which is a less precious blessing. It seems also more agreeable to public utility to punish several sorts of crimes with hard labour than death. Imprisonment for life has been admitted by all nations

Let us next consider the establishment of private property.

Private property is any person having a clear & exclusive right to a certain portion of the goods which serves both for the support & conveniency of life. In a very imperfect state community of goods may subsist in a great degree. Some attempts have been made in civilized states to

introduce it in some measure, and in some pri=
vate societies of the religious kind it has been
established & practised. But in civil society fully formed,
especially if the state is extensive or intended to grow,
private property is essentially necessary, is founded
on reason & the nature of things, & public utility, for
the reasons that follow. (1) Without private property
no laws would be sufficient to compel universal
industry; numbers would be idle & slothful & maintain
themselves on the labour of others. (2) There is reason
to expect in the present state of human nature that
there would not be a just & equal distribution to every
one according to necessity, nor any room for distinction
according to merit. (3) There would be no place for the
exercise of some of the noblest affections of the human
mind, as charity, humanity & benevolence. (4) Little
incitement to the active virtues labour, ingenuity,
bravery, patience. Some have laid down schemes
for making property common as Sr. Thomas Moore
in his Utopia, but in general they are chimerical.

There is no instance in fact where any state has made a figure in social life that had their goods in common. Sparta had the most of it, but it was very small & limited in its views, besides there is something so singular in the whole constitution of the Spartan Government that it remains a phenomenon for politicians & reasoners to account for its subsisting so long.

The original ways of acquiring property may be reduced to three two (1st prior occupation (2d our own Industry.

The extent or object of property contains these particulars

1st A right to the fullest use

2d A right of exclusion

3d A right of alienation; that is a right of alteration commutation, donation, in life & disposal at death. Thus property is perpetual. There are certain things called by civilians res nullius such as Temples Edifices, Gates & walls of a city

Civil society as distinguished from *domestic society* is the union of a number of families in one state, for their mutual benefit, by an express or implied contract or agreement. This agreement necessarily implies (1) The consent of every individual to live & be a member of that society (2) A consent to some particular plan of government (3) A mutual agreement between the subjects & rulers, of subjection on the one hand, & protection on the other

Whatever is the form of government in any society, they may be divided into two classes, the *rulers* & the *ruled*, the *magistrates* & *subjects*. The rights of rulers may be divided into *essential* & *accidental*. The *essential* are such as in general must be vested in every society. The *accidental* are such as may be given to the rulers of some societies but not in others. The essential rights of rulers are what require most to be enumerated, & these again are divided into *greater* & *less* essential

Of the first kind are (1st) Legislation (2d) Taxation for the public expence (3d) Jurisdiction or the ad-:ministration of Justice (4th) Representation, or ap-:pearing & acting in the name of the whole in all transactions with adjacent & independant States

The less essential rights are many, & they are called less essential because they may be varied more than others, such as Coining of money, possess-:ing or managing public edifices, conferring honours on officers &c.

The rights of subjects in a social state cannot be enumerated, but they may all be summed up in protection, that is to say, they who have sur-:rendered part of their rights expect the strength of the public force to defend & improve what remain.

Of the different forms of Government.

The forms of Government are either simple or mixt. Most of the ancient governments were of the simplest kind of wch they enumerate three, Monarchy, Aristocracy & Democracy ——— From these simple forms

are generated many complex forms. Two of them may be compounded together in equal or different proportions, or all three may be united as in our own government.

We shall now make some general observations on government & apply them to the various forms to shew whether any of them are preferable to the others & the advantages & defects of each in particular. There are four things which seem to be requisite in a system of government, & every form of Government is good as it possesses or attains them.

1st. <u>Wisdom</u> to plan proper measures for the public good.

2d. <u>Fidelity</u> to have nothing but the public good in view

3d. <u>Secrecy</u> <u>expedition</u> & <u>dispatch</u> in carrying measures into execution.

4th. <u>Union</u> & <u>concord</u> that one branch of the government may not impede or be a hindrance to another. <u>Monarchy</u> has plainly the advantage in

in *unity* *secrecy* & *expedition*. Many cannot so easily nor so speedily agree upon proper measures, nor can they expect to keep their designs secret; therefore, say some, if a man could be found wise enough and just enough for the charge, monarchy would be the best form of Government. *Aristocracy* has the advantage of all others for wisdom in deliberation, that is to say, a number of persons of the first rank must be supposed by their consultations able to discover the public Interest, but it has very little or no prospect of fidelity or union. The most ambitious projects & the most violent & implacable factions often prevail in such states. *Democracy* has the advantage of both the others for *fidelity*. The multitude always are true in intention to the interest of the public because it is their own Interest, they are the public; but at the same time it has very little advantage for wisdom or union & none at all for secrecy & expedition. Besides the multitude are exceeding apt to be deceived by demagogues & ambitious persons; they are very

apt to trust a man who serves them well with such power as he is able to make them serve him.

If the true notion of liberty is the prevalence of law & order & the security of Individuals none of the simple forms of government are favourable to it. Monarchy every one knows is but another name for Tyranny where the arbitrary will of one capricious man disposes of the Lives & properties of all ranks. Aristocracy always makes vassals of the inferior ranks who have no hand in government, & they commonly rule with greater severity than monarchs. A Monarch is at such a distance from most of his subjects that he does them little injury, but the Lord of a petty seignory is a rigorous taskmaster to his unhappy dependents. The Jealousy with which the members of an aristo-cratical state defend their own privileges is no security at all for humanity & easy treatment of their inferiors. Examp: The Spartans in their treatment of the Helotes & the Barons in all the feudal governments in their treatment of their vassals. Pure Democracy cannot

subsist long nor be carried far into the departments of state. It is very subject to caprice & the madness of popular rage. They are very apt to abuse a favourite & vest him with such power as overthrows their liberty, witness Athens & Rome. Hence it appears that every good form of government must be complex, so that the one principle may check the other. It is of im-portance to have as much virtue among the particular members of a community as possible, but it is folly to expect that a state should be upheld by integrity in every one that has a share in managing it. It must be so balanced that were every one draws according to his own interest & inclination there may be an equal poise upon the whole.

2^d The second observation upon the forms of government is, that where there is a balance of different bodies as in all mixed forms there must be always some nexus imperii, something to make one of them necessary to the other. If this is not the case they will not only draw different ways but will separate

altogether. In order to produce this nexus some of
the great essential rights of rulers must be divided &
distributed among the different branches of the legislature.

3d. The third observation is, that the ruling part of
any state must always have considerable property,
chiefly of lands, the reason is property has such an in-
variable influence that whoever possesses property must
have power. Property in a state is some security for
fidelity, because their interest is connected with the public
welfare. For this reason did man in every state
live entirely by agriculture an agrarian Law
would be necessary to liberty, because if a vast
proportion of property came into a very few hands
they would soon take the power to themselves; but trade
& commerce supercede the necessity of this, because
the great & sudden fortunes accumulated by trade
cause a rotation of property

4th. In a well formed state the subjects should not
be too numerous nor too few

5th. In every government a supreme irresistible

power must be lodged somewhere, in King, Senate or people, to this power is the final appeal in all questions.

6th. Dominion it is plain from what has been said cannot be acquired justly but one way that is by consent; there are two other ways commonly mentioned inheritance & conquest, the first generally arises from consent, the latter ought to be exploded.

As to the spirit & tendency of different forms of government (1) monarchical government has a tendency to politeness, elegance of manners & generally to luxury. The submission & obsequiousness practised at the court of a monarch diffuses itself through the whole state. (2) Aristocracy narrows the mind exceedingly, & indeed cannot long subsist in a large state. A small aristocracy however may subsist as a form of Government as long as any other. (3) Democracy tends to plainness & freedom of speech & sometimes to a savage & indecent ferocity. Democracy is the nurse of eloquence, because when the multitude have the power persuasion is the only way to govern them.

We shall next make a few remarks & then point out the object of civil Laws & the manner of their operation

1st The first remark is that a constitution is excellent when the spirit of the civil Laws is such as to have a tendency to prevent offences & make men good as much as to punish them when evil. This is necessary in some measure, for when the general disposition of a people is against the laws they cannot long subsist even by a strict & rigorous execution on the part of the rulers. There is however more of this in some constitutions than others. Solon & Xenophon as well as Lycurgus seem to have formed their plan very much with a view to direct the manners of the people in the first place. But how shall the magistrate manage this matter, or what shall be done by law to make the people virtuous? If virtue & piety are inseparably connected, to promote true religion is the best & most effectual way of making a virtuous & regular people. Love to God & love to man is the substance of

religion, when these prevail civil Laws will have little to do. But this leads to a very important disquisition, how far the magistrate ought to interfere in matters of religion. Religious sentiments are very various, & we have given it as one of the perfect rights in natural liberty, & which ought not to be alienated even in society, that every one should Judge for himself in matters of religion.— What the magistrate may Do in this case seems to be confined to the three following particulars (1) The magistrate or ruling part of any society ought to encourage piety by his own example & by endeavouring to make it an object of public esteem. Whenever the general opinion is in favour of any thing it will have many followers. (2) The magistrate ought to defend the rights of conscience & tolerate all in their religious senti-ments that are not injurious to their neighbours.

The second preliminary remark is, that Laws should be framed so as to promote such principles in general as are favourable to good government & particularly that principle if there be one that gives rise to the constitution & is congenial with it.

Such a principle as I have in view is generally the point of honour in a country & this lawgivers should endeavour to preserve in its full vigor, for whenever it is undermined the constitution goes to ruin. Of these principles <u>Sobriety</u> <u>Industry</u> & <u>public spirit</u> are the chief. Some states are formed to subs:sist by sobriety & parsimony as the Lacedemonian. Industry is the prevailing spirit in others as in Holland, & public spirit in others as at Athens & Rome & in Britain; only public spirit may be diversified, sometimes it is a passion for glory and dominion as in Rome, & sometimes for preserving liberty as in Greece & Britain. When I say that in the management of a state the utmost attention should be given to the principle of the constitution to preserve it in its vigor, I mean that though all other crimes are bad & tend to the ruin of the state yet this is much more the case with crimes against the principle than any other. Any act of immorality was bad at Sparta, but to make poverty & parsimony

reproachful & to introduce fine houses & furniture and
delicate entertainments would have been instant ruin.
Any act of immorality would be hurtful in Holland
but to make fraudulent bankruptcy less infamous
than it is would immediately destroy them. Sobriety
Industry & public spirit are nearly allied & have a
reciprocal influence on one another, yet there may
be a great degree of some of them in the absence of
others. In Sparta there was much sobriety & public
spirit but little industry; in others industry and
public spirit but very little parsimony. — In
opposition to this <u>Mandeville</u> wrote a book called
the Fable of the Bees which seems to be levelled against
sobriety, industry, & public spirit all-together, & his
position is, "that private vices are public benefits",
"that the waste & luxury of one man supplies the
wants of another"; but it is easy to overthrow his
reasoning, for though sober & industrious persons
spend less than profuse persons, yet sobriety and

industry tend much more to population & by this means they are mutually serviceable to each other. Luxury & vice only waste & destroy they add nothing to the common stock of property or of happiness; experience fully justifies this, for though from the luxury of one man another may reap some gain the Luxury of a nation always tends to the ruin of that nation.

A third preliminary remark is, that Laws may be of two kinds either written or in the breasts of the magistrate. In every constitution of note there is something of each of these kinds. It is uncertain whether it is better to have many or few special Laws. On the one hand it seems to be the very spirit of a free constitution to have every thing defined as strictly as possible & to leave little in the power of the Judge; but on the other hand a multiplicity of laws is apt to lead to litigation & to end in ambiguity; that perhaps Judges of

equity chosen by the district in which they live and are to act, & chosen but for a time would be a more just & equitable method of ending differences. But the difficulty of settling a constitution so as always to secure the election of impartial Judges has made modern states where there is liberty prefer a multiplicity of written Laws.

The last preliminary remark is, that no human constitution can be so formed but that there must be exceptions to every Law, so that there must be in every nation oppression under form of Law according to the old maxim summum Jus, summa injuria; this further shews the necessity of forming the manners of a people.

After having laid down these preliminaries we may observe that the object of civil Laws may be divided into the following particulars vizt Moral, Commercial, & political Laws. — The transgressions of the moral Laws are called Crimes. Commercial Laws regulate all contracts in commerce

or intercourse between man & man, shew when a contract is valid & how to be proved; the transgression of such Laws are called Frauds, they chiefly regard the acquisition, transmission or alienation of property. Political or civil Laws limit & direct persons in the exercise of their own rights in respect to their interfering with the rights of others, this contains the whole of what is called the police of a country; a number of things in this view may become illegal which before were not immoral.

In all polished nations there are punishments annexed to the transgression of the _moral_ Laws; this is called their sanction. Here the three following things are necessary (1) To determine what crimes ought to be enquired into by the magistrate; it being necessary in a free state that crimes should be precisely determined and defined with their several degrees. (2) To appoint the methods of ascertaining the commission of crimes. This is usually by _Testimony_, in which we are to consider the

number & character of the witnesses. Two witnesses are generally esteemed necessary to fix crimes upon any accused person, not but that the positive evidence of one person of Judgment & untainted character is in many cases sufficient to gain belief, & often stronger than two of unknown or doubtful character, but because it was necessary to lay down some rule; & two are required to guard against the danger of hired evidence & to give an opportunity of trying how they agree together. To have required more would have made proof difficult or impossible in many cases. It seems to be a matter not easily decided whether it be agreeable to reason & Justice that in the case of very atrocious crimes, & on account of the atrocity less evidence should be sufficient for conviction or more required. On the one hand the more atrocious the crime the greater the hurt to society & the more need of public vengeance, on the other hand the more atrocious the crime & the severer the punishment, it seems agreeable to Justice, the conviction should be upon the more unquestioned

evidence. — Evidence may be distinguished into two kinds, *direct & circumstantial*. (3) To proportion & appoint the punishment due to every crime when committed. Punishment in all regular states is taken wholly out of the hands of the injured person & committed to the magistrate, though in many cases the injured person is suffered to join the magistrate in the prosecution & to have a certain claim by way of reparation where it is practicable; therefore in general the punishment must consist of two parts (1) reparation to the sufferer. (2) The *vindicta publica*, which has sometimes two ends in view, to be an example to others, & to reclaim and reform the offender, as a corporal punishment less than death. Sometimes but one, the good of others in view, as in capital punishments & banishment. The kind of punishment & degree is left wholly to different lawgivers, public utility being the rule by which they ought to go. Punishment is not always proportioned to the atrociousness of the crime in point of morals, but the frequency

of it & danger of prevalency. Some require & some will bear greater severity in punishment that others. The same or similar conduct often produces opposite effects. Severe Laws & severe punishments sometimes banish Crimes, but very often the contrary. When Laws are very sanguinary it often makes the subjects <u>hate</u> the Law more than they <u>fear it</u>, & the transition is very easy from hating the Law to hating those who are entrusted with the execution of it. Another usual effect of excessive severity in Laws is, that they are not put in Execution; the public is not willing to lend its aid to the discovering & conviction of offend-:ers so that in time the Law itself becomes a mere brutum fulmen & looses its authority. Very severe & sanguinary laws are therefore rarely serviceable

The second object of civil Laws being to regulate the making of Contracts & the whole intercourse between man & man relating to the acquisition, possession & maintenance of property; it will be necessary to

consider the nature & various kinds of contracts, but for this see Hutchinson's Moral Philosophy —

The third & last object of civil Laws is, the limiting the citizens in the exercise of their rights, so as they may not be injurious to one another, but that the public good may be promoted. This includes the giving directions in what way Arts & commerce may be carried on & in some States includes the whole of what is called the police of a community, the manner of travelling, building, marketing, time & manner of holding all manner of Assemblies. In Arts & commerce particularly the police shews its power. It will only be necessary here to make a few remarks on the nature & spirit of these Laws. — (1) These things are in themselves arbitrary & mutable, for there is no morality in them but what arises from common utility. (2) Men in general have but a very slight sense of the malignity of transgressing these

these Laws, such as running of Goods, breaking over a fence &c. In the best constitutions some sanctions are appointed for the breach of these Laws. Whenever a state is founded upon the principles of liberty such Laws are made with severity & executed with strictness. Finally a man of real probity will adopt these Laws as part of his duty to God & the society, & is subject not only for wrath but for Conscience sake

Three Poets in three distant ages born
Greece,[a] Italy[b] & England[c] did adorn
The first in loftiness of thought surpast
The next in Majesty, in both the last
The force of Nature could no further go
To make a third she joined the former two

Dryden

(a) Homer
(b) Virgil
(c) Milton.

An Oration

On the advantages & methods of attaining

Useful Knowlege

Delivered at the meeting of the

Admonishing Society

Fryday Evening 24th March 1773

Omne tulit punctum qui miscuit utile dulci

Horace

Mr. President, Ladies & Gentlemen

Having the honor of being appointed, by the unanimous suffrage of this Society, to deliver the first monthly oration; I chearfully comply with the requisition; though sensible of my inability to execute the task in so just & elegant a manner as I could wish, & the nature of the thing seems to require. Animated with the novelty of the subject, & flushed with the highest expectations of hearing something new & extraordinary on the occasion, I fear you entertain such raised Ideas as to meet with an unpleasing disappointment. Hoping however that the author's diffidence will operate favourably on your minds, & relying on your candour to put a favourable construction on what I shall offer, I proceed without further apology.

As this discourse is intended as a prolegomena or introduction to what may hereafter be delivered in this way, I beg your attention a few minutes while, in compliance with your directions, I attempt to say something concerning the advantages & methods of

of obtaining useful knowlege; that being professedly the design of our institution.

We come into the world ignorant of every thing around us; & it is only by the exertion of our intellectu[al] faculties, which gradually unfold themselves as we advance from infancy to manhood, that we obtain any knowlege of the numerous objects, that constantly present themselves, to our view or contemplation. Our bountiful creator has likewise formed us, with such an innate desire of knowlege, as powerfully prompts us to investigate the nature & causes of every thing aroun[d] us. And as we are daily & hourly surrounded with a multiplicity of objects, both useful & necessary for ou[r] preservation & well being in our present state, we must of consequence, be either miserable or happy, in proportion as we are ignorant of, or acquainted wit[h] those things with which we are so nearly connected. Hence the cultivation of the understanding, and the improvement of the mind in useful knowlege, has enga[ged] the attention of the wiser & more judicious part of man-kind, in all ages of the world; but to the honor of the

present be it spoken) no age seems to have been equally sensible of the advantages & importance of mental improvement, & to have pursued with such unwearied assiduity & insatiable avidity the acquisition of it, as this in which we live. To convince you of the truth of this, give me leave to take a short review of the progress of Learning from it's declension upon the destruction of the Roman Empire, to it's present flourishing condition.

When the Goths & vandals, those numerous northern nations, that issued in swarms like bees from a hive, & over-run all the West of Europe, had, with sacrilegious fury, destroyed all those monuments of grandeur, elegance, & learning, which once rendered the polite romans, as famous for science & literature, as for conquest & war; learning became extinct, & every branch of useful knowlege lay entirely uncultivated. Those savage nations, were not content with inhumanly exterminating the people they conquered, & demolishing every grand & stately fabric of elegance & ingenuity; but, with ruthless insatiety, they extended their rapacious

cruelty to the innocent remains of the wise & the learned. The painful & elaborate productions, of philosophers, poets, & historians, fell unrelented sacrifices to ferociousness & stupidity. A dreadful era soon succeeded! The human mind neglected uncultivated & depressed, sunk into the most profound ignorance. Europe did not produce, during four centuries, one author who merits to be read, either on account of the elegance of his composition, or the justness & novelty of his sentiments. But, towards the beginning of the 12th century, we dis-cern the first symptoms of the human mind, awaking from that lethargy into which it had long been sunk & observe it turning with curiosity & attention, towards the cultivation of literature & science.

Its first efforts, however, were extremely ill directed. The powers of imagination attain some degree of vigour before the intellectual faculties are much exercised in speculative or abstract disquisition. Men are poets before they are philosophers. They feel with sensibility & describe with force, when they have made but little progress in investigation or reasoning.

The age of Homer & of Hesiod long preceeded that of Thales or of Socrates. But, unhappily for literature, our ancestors, deviating from this course which nature points out, plunged at once into the depths of abstruse & metaphysical enquiry, & wasted the whole force of their genius, in speculations as unavail-:ing as they were difficult. Hence arose those subtle & unintelligible distinctions, those fine spun theories, that engrossed the whole attention of the literati in those days, & rendered learning contemptible to the bulk of mankind.

But, happily for us, Learning soon began to put on a more favourable aspect. A few great & happy geniuses, seeing the bad state of philosophy, boldly ventured to deviate from the beaten tract of their predecessors, & to exert themselves for its improvement. The foremost in this class, & perhaps the greatest genius was, Lord Chancellor Bacon, next the Honourable Mr Boyle, & after him the immortal Sir Isaac Newton. These great men, by mear dint of genius

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& industry, & by directing their enquiries in a right man-
-ner, soon set Learning again on a respectable footing;
since which it has been regularly cultivated, the intel-
-lectual powers of the human Soul have been rightly
directed, & useful discoveries daily made, in every
branch of knowlege. So that we now look back
with contempt & ridicule, on those products of the
mind, that were formerly esteemed impossible to be
excell'd, & scarcely to be equalled.

The advantages arising from the cultivation of
useful knowlege, are so many & so obvious, as must
strongly recommend the same to every person of the
least consideration. For, besides the pleasing sensation
that arises in the mind from the discovery of any useful
proposition or important truth, before unknown, (which
of itself would amply repay us for all the labour and
pains we are at in the acquisition), the knowlege of
all those things, that administer to the welfare, ease,
grandeur, & convenience of life, have been obtained by
the improvement of ~~knowlege~~ the human mind.

It is to our skill in Geometry that we know the

extent, figure, & exact area, of our landed estates; and by our acquaintance with Navigation we are enabled to traverse the vast extended ocean; & form connections with the inhabitants in every quarter of the globe- By means of this science & with the help of that wonderful fossil the magnet, our numerous floating storehouses make their way with sufficient certainty through the liquid element, & furnish us with the products & manufactures of foreign climes.

By the cultivation of knowlege & science so many mechanic arts & trades have been invented & improved, that the most exuberant wish can scarce desire, or luxurious fancy paint in the imagination, any thing which human skill cannot effect. We are hereby enabled to take cognizance of this globe of earth, & become acquainted with the largeness figure & disposition of the same, as well as of the extent situation & various circumstances, of the several kingdoms and nations in the world.

Nor is our knowlege confined to this lower world this speck of earth, but the human mind assisted by

the discoveries & improvements in literature soars aloft into the upper regions of the universe & stretches its ken far beyond the limits of our solar System, throu worlds unnumbered regions infinite.

Not to mention the other learned professions, the discoveries & improvements that have been made in physic, are further evidences of the advantages arisin from the cultivation of useful knowlege. If aught is required to prove this, let those declare it who have long pined under the slow decays of a lingering consumption till in medicine they found the noble restorative; or wh have gasped for breath under a painful asthma, till relieved by this noble science; let those speak whom unwealdy Dropsies have burthened, or whom torturin fits of the Stone have afflicted; whose limbs have been wreathed with excruciating pains, who have measured the tedious moments by the throbbing pulse, without any truce from their agonies, till the wholesome draught has interposed its kindly aid, & as it were arrested death in his career.

Above all others let those who have experienced the salutary effects of Inoculation in the small pox, & the

many other useful discoveries in physic, testify this. —
To those I appeal, who have been witnesses of the dreadful havoc which that pestilential disease has often made, whose baneful influence breaks up all friendly intercourse & commerce with Society, & which, with remorseless fury, snatches away the blooming youth & hoary sire, & stamps deformity on every visage. How often has it laid towns waste; depopulated cities; & like a distructive besom swept away whole nations, & even thinned the number of mankind? — Hail sacred physic! from whose healthy magazine the remedy is at length provided! — We behold the scene now reversed, the contagion mitigated & the disease subdued. — Now health returning chears the vital frame; now the beautiful countenance is secured from its malignant rage, & every feature still beams with majesty & love.

Julius Cæsar & Alexander, the most celebrated instances of human greatness, took a particular care to distinguish themselves by their skill in the arts and sciences. We have still extant several remains of the

former which justify the character given him by the learned men of his age. As to the latter it is a known saying of his that he was more obliged to Aristotle who had instructed him, than to Philip who had given him life & empire; so that the love of conquest was but the second ambition in Alexander's soul.

Knowlege is indeed that, which, next to virtue truly & essentially raises one man above another. — It finishes one half of the human soul. It makes being pleasant to us, fills the mind with entertaining views & administers to it a perpetual series of gratifications. It gives ease to solitude & gracefulness to retirement. It fills a public station with suitable abilities, and adds a lusture to those who are in the possession of them.

The story of Solomon's choice, not only instructs us us in that part of his history, but furnishes us with a very fine moral, that he who applies his heart to wisdom, does at the same time take the most proper meth for gaining long life riches & honors, which are very often not only the reward but the effects of wisdom.

In fine, in whatever light we view knowlege we shall find it administers a plentiful reward to repay us

for all the pains we can possibly be at in obtaining it.

If such are the advantages of useful knowlege who is there that is not solicitous to pursue its acquisition? — To cherish that laudable principle in each of your breasts, & to offer a few hints as to the most suitable method of obtaining it, I shall devote the remaining part of this discourse.

The greatest genius left to itself is like the earth when destitute of the sun, incapable of bringing its productions to maturity. A course of regular study is to the mind like the rays of light darting through the obscurity of chaos. It dispels the clouds that envelope the understanding, & enables the diligent enquirer to penetrate into the secret recesses of nature. Destitute of culture the imagination shoots wild & unprofitable, but directed by knowlege & improved by science, a natural genius is like a rich soil, the fruitful source of many benefits to a country.

A thirst of knowlege & a spirit of enquiry are natural to man. It merits our endeavours to direct

these in a right & profitable manner.

As the summit of a high mountain can only be attained by steps gradually rising one above another, so in the pursuit of knowlege we must begin at the foundation & proceed by gradual advances till we have acquired the same. The elements or first principles of every science are therefore first of all to be studied & thoroughly understood, before we proceed to the more abstruse & extensive parts thereof. The knowlege of the more intricate & hidden truths of science are to be developed by degrees. We can only arrive at them by the assistance of other more obvious truths which they are connected with, & which leads us to them by a certain chain of facts, observations, & just deductions of strict reasoning. For scientific truths of every kind rise out of one another in some measure like the propositions of Euclid. If we do not understand the demonstration of the first we shall not be able to perceive the proof of the more intricate ones that follow which can only be explained

by means of them, as a certainty of the latter depends upon the evidence of the former. What would require years of study to gain a superficial acquaintance with, if we followed no just plan, may be attained within a few months, by pursuing a regular system; so much does method contribute to facilitate our progress.

One of the greatest sources of improvement arises from the institution of Societies, or the union of ingenuous men, mutually engaged in the pursuit of knowlege. By the united efforts of individuals, collected into one body, the greatest improvements have often been made, & the most useful truths discovered. Such societies likewise, form a kind of magazine which collects together all the knowlege of the learned, and consecrates it to public utility. It establishes a commerce for the community, which never perishes, but from age to age is a fruitful source of new acquisitions. Thus institutions which have appeard inconsiderable at first, improve fast & make hasty

strides towards importance & grandeur. The royal Society at London, the royal Academy at Paris, the Leopoldine society, ~~& the society~~ of natural curiosities in Germany, the Petropolitan society at Petersburg the society of Arts at Turin & the Belles Lettres society in Italy, together with the royal colleges of Physicians at London & Edinburgh are so many striking instances of the rapid progress of arts & sciences from a joint conspiration of numbers of learned and ingenuous men. Most of the institutions abovementioned have, within less than a century, rose from small & inconsiderable beginnings, to the greatest honor & reputation throughout the literary world. But I need not take the trouble to cross the atlantic, for proofs of the advantages arising from the institution of societies. Our american Colonies afford us some striking examples to that purpose. Who does not know that about 6 years ago the American philosophical society held at Philadelphia for promoting useful knowlege, consisted only of a few individuals, who, by exerting themselves, have immortalized their names, & extended the literary fame of that flourish

society to every quarter of the globe; so that we frequently hear of men of the greatest learning & eminence in different parts of the world, earnestly soliciting the honor of becoming members thereof. Even our own province, frequently stigmatized for producing so few men of eminence in the learned professions, can boast of having a medical Society subsisting within it, the most noted of any in America, ~~& th~~ & though it has hitherto been so unfortunate as not to meet with any public encouragement or patronage, yet, from the activity & unanimity of it's members, it's reputation daily encreases, & I doubt not will, ere long, arrive to that degree of credit & grandeur as to rival those justly celebrated institutions of the kind, in Great-Britain.

Considering the many & great advantages that arise from the institution of societies, in the improvement of useful knowlege, from the examples here produced, I cannot help congratulating each of you my fellow members of this society, on the pleasing prospect which the present institution naturally affords us.

Though the alwise author of our being, has been pleased to cast our lots in this obscure corner of the earth, at a distance from seats of Science & literary resort, & thus laid us under the difficulty of investigating import-ant truths without those assistances that more cultivat & enlightened regions afford; yet, I flatter myself, under all these disadvantages, we shall, by constant assiduity & perseverance, surmount every obstacle, & extend the fame of our society beyond what our most sanguine wishes could at first have expected.

Is it a pleasing Dream, or has some friendly spirit in-fused the agreiable intelligence into my ear, that this Societ though now in its infancy & but just beginning to emerg from obscurity, will, in a short time, by the spirit & activ of its members, both male & female, grow & flourish with such amazing rapidity, as to attract the notice of the public, triumph over all opposition, & prove a real hon to all its members. So fully assured am I that this will be the fate of our well meant efforts, that I feel mysel fired with a noble ardour to exert every nerve in order bring about so desireable an event; & happy should I be could I transmit some sparks of this ambitious fire

which burns within my breast, so as to kindle the like flame in each of yours. Both science & honor offer one fate to their votaries. They reward the courage of the brave & the steady, & repel the faint-hearted & irresolute. Consider my fellow associates the success, the credit & the growth of our society depend entirely upon our activity zeal & unanimity. To animate you in the noble pursuit, and determine you to persevere therein with unshaken firmness & constancy, suffer me to recommend to you to place before your eyes, the illustrious examples of great men, who, by bare dint of genius & application, have pushed their researches into the bosom of nature, & extended the bounds of useful knowlege. Tread in their steps. Be indefatigable in the cultivation of literature. The rewards of the rich, the countenance of the great, the justly merited esteem of the virtuous & the wise, which outlasts the fleeting years of human date, will not be wanting for your encouragement. You will thereby be capacitated for filling the several stations in life to which providence may destine you, with dignity & honor. You will live respected, will die regretted, & your names be transmitted with honor & respect to posterity

Before I conclude give me leave to address myself to you female associates. You have now an opportunity of exercisi without restraint, those faculties which the God of nature ha equally endowed you, with our sex. Let not your remissn in embracing it, operate to your disadvantage, by confirm us in the common (but I hope erroneous) opinion that y were not formed to participate of those refined enjoymen that result from the cultivation of an enlarged understandi

Learning & knowlege are perfections in us not as we ar men but as we are reasonable creatures, in which class the female world is upon the same level with the male. — In justice & tenderness to your sex I must publicly declare, that t many examples we have of females who have made great advances in literature, are sufficient to convince us that the disadvantages of education, & the narrow sphere of action whi custom has prescribed you, are the sole reasons why of you fall short of us in those respects.

To conclude in general, as the design of Learning is to mak us wiser & better, "to mend the life & guide the heart" to enable to discharge faithfully the duties incumbent upon us as good citi true patriots, & sincere christians; let us all in our pursuit knowlege have an eye to those important ends & make it o study to merit those excellent & truly noble characteristics for which purposes may every heart & every hand be united.

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Mr. President —

Agreeable to appointment at our last meeting I shall now endeavour to lay before you in as concise & plain a manner as possible, my Ideas of <u>Civil Liberty</u> a subject in which we are all deeply interested: and though its fundamental principles are easily known yet they seem to be but little understood by the generality of mankind. All they know is from what they feel. Every ploughman knows a good Government from a bad one by the effects of it, but no other way; he knows whether the fruits of his labour are his own & whether he enjoys them in peace & safety, if he does he enjoys civil Liberty, if not he is more or less a slave to tyranny & arbitrary power. For civil Liberty strictly speaking exists only where all the members of a community are allowed the free use of all those rights & privileges to which they would be justly entitled in a state of nature, subjected to those restrictions & limitations (& those only) that are necessary for the

maintenance & security of the remainder. — It being impossible for mankind in a state of civil society to enjoy all those rights & privileges which they claimed in a state of nature. For as every one originally had a general right to every thing, of consequence no one could have an exclusive right to any one thing. Thus in the case of property, when all things lay in common, though preoccupancy would, according to our present notions of justice be deemed a legal appropriation & consequently vest an absolute right to that particular thing in the preoccupier exclusive of every subsequent claimant; yet it seems to have been otherwise in a state of nature, for the doctrine of legal appropriation must evidently have then been unknown for want of some Law or fixed rule to ascertain the same.

Had man continued in a state of primeval rectitude unbyased by interest, uninfluenced by

prejudice & ungoverned by passion, the human species might possibly have continued in a state of nature to this day, every one without compulsion contributing all in his power to preserve universal concord & amity. But human depravity soon convinced mankind that such a state is now impracticable, for the injustice, avarice, ambition selfish desires & impetuous passions that universally prevail among men render it manifest that without civil power, neither the lives liberties nor property of individuals could be preserved in safety, & that it is by civil power alone an effectual remedy, & such a one as must strike the senses of the most inconsiderate, can be found for the evils to be dreaded from these vices of men. 'Tis therefore very probable that mankind soon feeling the inconveniencies of a state of anarchy or natural Liberty, gradually formed themselves into civil communities for the good of the whole & of each individual, & upon

thus entring into Society they found it necessary for every one to give up those vague transient and ambulatory rights & privileges which they enjoyed in a state of natural Liberty for others less extensive but more fixed & permanent.

But in every community where civil Liberty exists in its fullest extent the partial restraint put by the laws of agreement & society upon natural Liberty is so far from being a grievance & burthen that it is chearfully acquiesced in by the wise and judicious part of mankind. For no man that considers a moment would wish to retain the absolute & uncontrouled power of doing whatever he pleases, the consequence of which is that every other person would have the same power & then there would be no security to individuals in any of the enjoyments of life. — Political therefore or civil Liberty which is that of a member of society, in contradistinction to natural liberty on the one hand and slavery on

the other is natural liberty only so far restrained by human Laws as is necessary & expedient for the general advantage of the public. Hence we learn that a Law which restrains a man from hurting any of his fellow creatures, though it diminishes the *natural*, increases the *civil* Liberty of man-kind; but every capricious & unnecessary restraint of the will of a subject in whatever form of Government practiced is a degree of tyranny & oppression. And all laws made to regulate & constrain our conduct in matters of indifference without any good end in view are an infraction of civil Liberty; but it is otherwise where any public advantage can arise from the observance of them. Laws when prudently formed are by no means subversive but rather introductive of liberty, for as Mr. Locke well observes where there is no Law there is no freedom.

When societies were formed a legislative power or right of making Laws binding on all the members of the society followed of course. This legislative power is lodged in different hands in different states. To examine into the original cause of this difference in the constitution of states would be an agreeable enquiry, but as 'tis foreign to my present purpose shall pass it by & conclude this paper with a few observations on the most probable means of securing civil Liberty in a Government.

The grand secret here lies in making the interests of the magistrate & subject the same as far as human policy can contrive. Liberty cannot be preserved any other way. The weakness & depravity of human nature convince us that men will act for interest against duty as often as they dare. So that to engage them to their duty interest must be linked to the observance of it & danger to the breach of it. Human sagacity has yet found out but one

certain expedient to effect this, & that is to have all the concerns & regulations of the community directed by all the members of it as far as possibly can be. And where they are too numerous & too widely diffused to meet together on all emergencies to assign deputies whose interest is the same with their own, & whose power is so intermingled with theirs & so engaged upon the same bottom that both must share the same fate. When deputies thus act for their own interest by acting for the interest of their constituents; when they can make no Law but what they themselves & their posterity must be subject to; when they can give no money but what they must pay their share of; when they can do no mischief but what must fall upon their own heads in common with their countrymen; their constituents may then expect good Laws, wise regulations and much frugality.

The freedom therefore of every constitution consists in the persons *entrusted* and *representing* either never having any interest detached from the persons *entrusting* and *represented*, or never the means to pursue it. This can only be effected these two ways; either by making the

deputies so numerous that there may be no possibility of corrupting the majority; or by changing them so often as not to afford sufficient time to corrupt them. Without one or both of these regulations we may lay it down as a maxim in politics that it is impossible to preserve a free government long

In a monarchical form of Government like that of ours where the creation of the ministry & the gift of honors & offices are vested solely in the Crown, a frequent fresh election of representatives is necessary to preserve civil Liberty. This is what the writers in politics call a rotation of magistracy. Men when they first enter into magistracy, have their former condition often in view; they remember what they themselves suffered with their fellow subjects from the abuse of power & how much they blamed it; hence their first purposes are to be honest & just. And probably for some time they continue so. But the accession of power speedily intoxicates their hearts, they soon grow indifferent, loose their moderation, & by degrees become insolent rapacious & tyrannical. A rotation therefore as well of ministry as of magistracy seems essentially necessary to preserve freedom or civil Liberty, especially in our Government. I might now go on to enquire into particulars of our excellent constitution & compare them with ye above scheme of civil Liberty & examine w: ann. trienn. or sept. elections.

Mr. President

As the word Taste is very often made use of in conversation I judged it would not be improper to make it a subject of this Evening's exercise. Nothing is more frequent than for us to say, "such a one is a man of taste or of a fine taste" & "such another one of no taste or of a bad taste;" now in order that we may affix just & clear Ideas to words so often made use of among those who wish to distinguish themselves by the modish epithet of polite, I will endeavour in the first place, to explain the true meaning of the word Taste as expressing a faculty of the mind. ~~2d lay down rules to know whether a person be possessed of a good or bad taste~~ & how it is discovered & then make some observations on the method of attaining it.

The sense of Taste with which the alwise author of our nature has furnished us, & by wc. we distinguish & relish the various kinds of nourishment that are adapted to health & pleasure has occasioned this metaphorical use of the word here intended & which may be defined that faculty of the soul which readily discerns the beauties & imperfections of objects, a sudden perception which like the sensation of the palate anticipates reflection; like the palate it relishes what is good with an exquisite &

pleasing sensibility & rejects the contrary with loathing & disgust.

To have a taste then, supposes something more than merely to percieve & to discern with accuracy the beauty of any work or object. This beauty must be _felt_ as well as _percieved_; the mind must be touch'd & affected by it in a lively & sensible manner. This feeling however in order to constitute a _true taste_ or as we more frequently express it a _good taste_, must not be a vague & confus'd sensation; but must be attended with a distinct view a quick & comprehensive discernment of the various qualities in their several relations & connections which enter into the composition of the object we contemplate. And in this we see another striking resemblance between the _intellectual & sensual taste_; for as a nice palate percieves immediately the mixture of different liquors, so the man of taste will quickly discern the motley mixture of different styles in the same production: & let the beauties & defects be ever so closely blended in an object will always be capable of distinguishing the former from the latter & that

not merely by the agreeableness or disagreeableness of the sensations which beautiful or deformed objects or Ideas occasion in the mind in a mechanical manner but in consequence of a well governed sensibility which instantaneously perceives & feels every perfection and imperfection

If a person desires to know whether he is possessed of this agreeable faculty let him carefully examine works of fancy & Art, & if he does not find himself delighted in an extraordinary manner, or if upon the reading the most admired passages in the celebrated works of authors, he finds a coldness and indifference in his thoughts he ought to conclude that the defect is in himself & that it is not the author that wants these perfections so universally admired but that he himself wants the faculty of discovering them. He should likewise be careful to observe whether in reading an author he tastes the distinguishing perfections or specific qualities of the writer whether he is particularly pleased with Milton's bold & lofty style, with Addison's smooth & easy

periods, with Hervey's florid & copious diction or Young's pointed & nervous language. He should also consider whether he feels himself differently affected by the same thought which presents itself in a great writer from what he is when he finds it delivered by an ordinary one. For there is as much difference in apprehending a thought cloathed in beautiful & elegant language & that which is low & vulgar as in seeing an object by the light of a Candle or that of the Sun. If then upon viewing a piece of curious painting or statuary we not only are pleased but sensibly feel & nicely discern all its beauties; if upon hearing good music the ear is not only agreeably entertained with the harmonious sound, but the mind sensibly impressed with emotions exactly correspondent to the nature of the concert; if upon reading a fine writer we readily discern the peculiar beauties of style & diction & with ease enter into the spirit of the Author we may without vanity pronounce ourselves persons of Taste

It is very difficult to lay down rules for the acquirement of such a taste as I am here speaking of. For in fact we may say of it as of poetry that the faculty must in some degree be born with us, but not-withstanding this, notwithstanding nature must first have stampt the soul with suitable powers for this purpose, yet, unless these be properly cultivated and improved they will be like the spontaneous productions of a fertile soil ungovernably luxurious & unprofitable. As it would exceed the bounds I have prescribed myself for this Exercise to make observations on all the different methods of improving the Taste in every art & science I shall for the future confine myself solely to the methods of im-proving our Taste for composition & fine writing. The most natural method for this purpose is to be con-versant among the writings of the most polite authors. A person who has any relish for fine writing not only discovers new beauties, or recieves stronger impressions from the masterly strokes of a great author every time he peruses him, but also gradually wears himself into the same manner of speaking & thinking.

Conversing with persons of a polite genius is another method for improving our natural Taste. It is impossible for a man of the greatest parts to consider any thing in its whole extent, & in all its variety of lights. Every one besides those general observations which are made upon an author, forms several reflections that are peculiar to his own manner of thinking; so that conversation will naturally furnish us with hints which we did not attend to, & make us enjoy other men's parts & reflections as well as our own. This seems the reason why men of great genius in the same way of writing seldom rise up singly, but at certain periods of time appear together & in a body, as they did at Rome in the reign of Augustus, in Greece about the age of Socrates, in France in the time of Racine, Molière & Boileau & in England in the last age, of w. the writings of Addison Swift Pope Thomson & Young are undeniable evidences.

It is likewise necessary for a person that would form to himself a finished taste of good writing to understand the ~~understand the~~ rules of criticism not mechanically only, but by feeling & percieving instantaneously their force efficacy & propriety.

Whoever is naturally endowed with the faculty of nice~~ty~~ discernment & accurate judgment & will carefully attend to the few simple rules here laid down will undoubtedly acquire more or less of a Taste for good composition & fine writing

Mr. President

Agreeable to my promise at our last meeting I shall now begin my remarks & observations on some of our most approved English authors. You are not however to expect regular criticisms upon the performances I shall take into consideration, but only a few useful hints to enable you the more easily to enter into the spirit of them & to excite in you a proper taste for relishing their beauties; while I occasionally point out some of their faults and imperfections. Though I readily acknowlege the Task I am undertaking is beyond my abilities fully to execute, as well as requires much more leisure to put in practice than I can command, yet I flatter myself my honest endeavours will be candidly recd. by my fellow members.

I shall begin with Butler's Hudibras. My reasons for giving him the honor of a priority are not because I esteem him before many others or look upon that poem as the most finished in our language but because in the first place no writer that I know of has ever attempted a regular criticism

of that celebrated performance & in the second place because it is a species of writing the most frequently attempted & with the least success of any kind whatever. Nothing strikes the fancy of the untutord part of mankind more than such humorous performances because being the sole product of natural genius they are more level with & more readily relished by an uncultivated understanding while the more sublime & elegant efforts of art and literature are but indifferently relished and imperfectly apprehended by them.

Hudibras though undoubtedly an heroic poem I think by no means deserves the venerable & majestic title of an Epic poem. This assertion will perhaps appear unjust to those who concieve concieve an Epic & heroic poem to be the same; but though I grant that the words are often used as synonimous yet I concieve we ought not to suppose them inseparable. Every epic is ~~not~~ an heroic poem, but every heroic poem is not an Epic one. A few verses or short poem

that celebrates the warlike atchievments of any person may be called an heroic poem though it has none of that majesty sublimity & grandeur necessary to constitute an Epic one. Heroic poetry then is but the species of which epic is the genus in a logical sense. The poem under consideration is not a true but a mock-heroic poem of the humorous kind or that species of it called <u>Burlesque</u> in which the various actions & characters of the persons introduced are represented in a ridiculous manner by making use of such quaint & comical language & similes as to render them compleat objects of derision. It differs from satire in that it aims solely at rendering its subject ridiculous while Satire has contempt & indignation in view & therefore makes use of different Ideas & different language though both agree in the end of bringing about the reformation of men & manners.

To proceed methodically I shall first consider the plan of the poem, Secondly the persons & characters Introduced, thirdly the sentiments & fourthly the language.

As to the plan of the poem: Whoever is well acquainted with that interesting period of the history of England from the time of Charles the first to the restoration of Charles the second an æra big with the most amazing events in which faction hypocrisy nonsense & absurdity universally pre:vailed will immediately percieve that the plan of this poem was founded upon real facts; but these are so contorted & interwoven with humorous fiction that it requires a very accurate acquaintance with the history of those times fully to understand them.

If we examine it according to the exact rules of heroic poetry we shall find that the action or fable of the poem is not so uniform as might be but as it is a species of writing wherein more liberties of this kind are allowed than in any other I am far from looking upon it as a great fault as thereby a greater opportunity is afforded the author of increasing the number of characters & persons introduced which seems to have

not an epic one

bear his design as well as to diversify the scenes. In my opinion he is guilty of a much greater fault in breaking off his narration in the midst of things as it were when the reader's attention is engaged in anxious expectation of the catastrophe. This defect he has artfully & ingeniously supply'd by the heroical epistle of Hudibras to his Lady with her answer from which the reader is left to judge of the event.

The Poem is divided into three parts & each of these parts into three Canto's an Italian word signifying a third part of a thing, & frequently used in this kind of poetry. These Divisions answer to those of Act & Scene in Dramatic composition & to Chapter & section in prose writing.

Let us next examine the characters of the poem by which I mean the persons or Actors that are introduced on the stage of action. The authors greatest excellency appears to me to consist in the number & variety of his characters so aptly introduced & so admirably diversified. Nor does his genius appear more conspicuous in any one thing

than in their so exactly supporting the characters given each one throughout the whole performance. Who can read the description he has given us of the Knight, (the hero of the poem) the Squire, of Tralla or of Sidrophel & Whackum, without forming a very striking Idea of those persons & which we find exactly verified by their conduct at all times. among the number of persons introduced there are two imaginary ones. Some critics imagine there is an impropriety in introducing imaginary beings in heroic poetry of every kind as it wants that probability which ought to take place throughout the whole; but the example of the greatest poets Homer, Virgil & Milton & others are a sufficient excuse to our author; besides they are so aptly introduced and so exactly answer the author's design in bringing them on the stage that I esteem them excellen:cies & not defects

The third thing to be taken notice of is the sentiments:

The sentiments are the thoughts & behaviour which the author ascribes to the persons whom he introduces & are just when they are conformable to the characters of the several persons. The sentiments have likewise a relation to things as well as persons & are perfect when they are suitable to the subject. Burlesque being the obvious design of our author his Sentiments exactly correspond with ^their intent. As he deserves commendation for the variety of his characters so likewise does he merit applause for the propriety & justness of his sentiments. After having formed an Idea both of the external & internal accomplishments of Hudibras from our authors very humorous description of him what can be imagined more exactly to correspond therewith than the Sentiments he every where expresses throughout the whole narrative.

The Last thing ^which I shall at present consider is the Language. Much greater allowances ought to be made in the language of this kind of writing than

in that of any other. The spirit of true wit & genuine ridicule of which our author was happily master will likewise abundantly palliate for many defects in his language. But after all that can be said in his favour it must be confessed that his language is too often faulty. Indecent phrases & sordid expressions are no part of a burlesque character. Quaint phrases Epigrammatic turns of wit & Ironical cant w.ch he deals so freely in are very excusable if not strictly justifiable in such a performance.

In my next Exercise I shall attempt to point out some of the particular beauties & imperfections of the poem under consideration to which this is designed as an Introduction

Mr. President

As sermonizing has become greatly in vogue of late, I apprehend it will not be disagreeable to my audience, should I, for a few minutes, lay aside the airs & finesse of an orator, for the more sober and venerable character of a preacher. —— The words which I have chosen, as the subject of your entertainment this Evening, you may find in St. Luke's Gospel. Ch: 20 v: 25 & second clause, "Render unto Cæsar the things that be Cæsar's"

Doubtless all of you, my dear hearers, are fully convinced of the divine authority & plenary Inspiration of every material part of Sacred Writ, & will readily allow, that the words of my Text, contain a positive injunction, from no less an authority than the Son of God himself. You will then immediately be convinced of it's great importance, & of the absolute necessity that all, who profess Christianity, should chearfully comply with the requisition. This I hope, will sufficiently apologize, for my making it

it the subject of your present meditations. — Without entering into a critical examination of the context, or enquiring into the occasion of this memorable saying of our blessed Saviour, I shall proceed immediately to the consideration of the words themselves, in the following manner.

1st. Enquire who Cæsar is.

2dly What are the things we are commanded to render unto Cæsar; and then make a brief application of the subject.

1st. Who is Cæsar. It is well known that at the time of our glorious Messiah's appearance on Earth Tiberius Cæsar was Emperor of Rome, to whom the Jewish nation was then subject, having some time before been reduced to the state of a Roman province & that all succeeding Emperors were styled Cæsars, and were vested with a supreme & absolute authority throughout the Roman Empire. It is obvious then that by the word Cæsar, with regard to us, is meant, the supreme power in the state to which we belong, or, in its largest signification, all those who, by the constitution

of

of our state, are placed in authority over us. — In every state or community there must be Cæsars and subjects, that is governors & governed or magistrates & people; and you all well know that, in our nation, the British Parliament is the supreme legislative, & the King the supreme executive power; or, in other words, that the parliament has the sole right of making laws, & the King of putting those laws, when made, in execution, either of himself, or by authorizing others to do it for him & in his name. Of these subordinate magistrates or officers of the Crown, there are various degrees, from the Lord Chief Justice of England, who is the highest commissioned officer in the Kingdom, to a petty Constable the lowest. Each of which is, in some respects, a Cæsar; that is, he is entitled to the same respect & obedience, to his lawful commands, from those who are under him, according to his station in the scale of subordination, as the supreme power itself is. Every species of inferior magistrates receiving their authority from the supreme, every insult or disrespect offered to any

of them; must affect the supreme magistrate, in proportio
to the dignity of the offices they fill.

Having thus briefly informed you what we a
at present, to understand by the word <u>Cæsar</u> in my tex
I now proceed to the second thing proposed, which wa
to enquire "<u>what are the things which we are comman</u>
<u>to render unto Cæsar</u>.

Nothing is more certain than that, by natu
all men are equal, & of course no one can be suppo
to owe a natural subjection to another. But as the
wants & fears of mankind strongly prompt them to
unite into societies, so their natural depravity soo
convinced them of the necessity of forming rules for the
regulation of their conduct, & of appointing certain
persons to superintend the same, & see that those ru
were strictly observed by every member of the commu
This artificial formation of civil societies, gave rise to
all those various degrees of superiority & subordinatio
among mankind, which we now see in the world, and
occasions all the reciprocal duties enjoined by the Laws of

society, & evidently implied in the words of our Text. For, though at first view, the words in the text may seem to respect only the people & not the magistrate, yet, as protection & subjection are mutual, it informs us, that our duty to magistrates & rulers, does not barely arise from their being magistrates & rulers, but from the defence & protection they afford us; so that the duties enjoined on subjects seem principally in return for the services done them by their superiors & governors. The things then that we are commanded to render unto Cæsar are, reverence & respect to all in authority over us, & ready & willing obedience to their lawful commands. I said lawful commands, because, though every subject is absolutely bound to obey such commands of the magistrate, in whatever station he is placed in the scale of superiority, yet, whenever he exceeds the bounds of his lawful authority, & commands such things as are not consistent with his place & station, the subject has no right to obey.

The

The true art of government therefore seems to consist in not governing too much. In the magistrate's not, exerting his authority to such a degree, as will render the people jealous of his power, & incline them to unite in opposing every measure adopted by authority, thereby stirring up a factious disposition dangerous to the peace & safety of society - But while I endeavour to inculcate a principle of lenity & moderation among governors, I wish to have them form just notions of the dignity & importance of their office, so as not to suffer that authority with which they are invested, to be contemned & despised for want of exerting it in a proper & suitable manner. By such a conduct they will preserve the spirit of their station, & secure themselves that veneration & respect that is necessary to render them truly useful. -
It is by no means decent for me, in the character of preacher, to censure the conduct of my superiors, or to suppose it blameable; but, as a good subject,

as

as a friend to my country, may I not wish & endeavour to heal its wounds without enquiring who it was that inflicted them? With reluctance I proceed, but religion requires that I should sacrifice inclination to the glorious cause of truth. I flatter myself then, you will give me your attention a moment or two longer, while I attempt to make a brief improvement of the subject, by applying it to the present unhappy situation, of our own place. There never was, perhaps, a period, since the first settling of our County in we: the minds of the people in general, were so agitated with contentious animosities, as at present; nor in which they seem'd so disposed, to counteract the schemes of their rulers, & so jealous of power & authority in their superiors. To What can this be owing? Is it the fault of the rulers themselves, or is it the fault of the people?

Though I am not so partial as to imagine, that the conduct of my superiors is perfect, and

unblameable; yet, I must frankly own that I think the people the most culpable. Nor does it require a very great degree [of] penetration for an observant person, to discover the root [of] this evil. A few factious Demagogues, possessed of a turbulent spirit, & ignorant of the fundamental laws of society, & the obligations due to the several orders & degrees of mankind in their relative capacities, take upon themselves to lead the heedless & inconsiderate part of mankind, which is by far the largest number, and by insinuating into their minds, I know not what stran[ge] notions, about arbitrary power, the designs of the magis-trates & rulers, have occasioned all that jealousy, oppo-sition, & contempt of authority, which, all of you my hearers, I doubt not, have seen too many instances [of]. For though the human species are dignified with the pompous appellation of rational intelligent beings, & plume themselves as being vastly superior, on that ac-count, to the brute creation; yet, I fancy you will all join with me in asserting, that, in the most importa[nt] concerns of life, the greater part of mankind exercise very little reason, & some none at all. Why else is it that

false patriot procures so many patrons & disciples? & those who endeavour to reduce all degrees & stations of mankind, to the same level & equality, find so many abettors & admirers? since the least degree of reason & reflection, must convince both the one & the other, that unless a true love of our country be the sole motive of public action, & the various degrees of superiority & subordination, established by our excellent constitution, be carefully preserved, the wheels of government will inevitably stop, & the lives liberties & property of Individuals, be exposed to the lawless ravages, of wicked & designing men. So that would mankind but open their eyes, would they but exercise the smallest degree of reason, they would be convinced, that it is not only their duty, but their real Interest, to keep up the several ranks and degrees of superiority among men. Besides, it is a fact, too notorious to admit of a dispute, that nine tenths of mankind are led & guided by the other tenth, &, in a general way, the tenth that are so ready & forward to take the

lead, in all public affairs, are the least fit & capable of it; whence all must go astray & embarrassing consequences ensue to society. A man also of excellen[t] sense, frequently sees only through the eyes of a fool, an intriguing fellow, or a knave. In this he Judges wrong, & his conduct must be so too.— These general hints (for the subject is too delicate to descend to particulars) may perhaps serve as a clue, to lead us to the discovery of the original sou[rce] of most of the disorders, that have happened in ou[r] peace.

Thus have I, (I apprehend), in some measure investigated the cause of the political disease, under which this part of our state, seems, at present, to labour. Glad should I be, was I so thoroughly skilled in political physic, as to be able to prescribe a certain & infallible cure for the same. To me the disease seems truly alarming, and prognosticates imminent danger. Its malignity daily encreases, & unless its virulence be destroyed

by a right application of some very powerful & well chosen medicines, it will inevitably prove fatal. Heaven avert so doleful a calamity! — Descend though favourite genius of the human race from thy celestial abode, & infuse into the several orders & degrees of mankind, such principles of moderation, benevolence & condescension, as shall incline them all, heartily, to concur, in promoting harmony, concord, & political unanimity! until this takes place, we may well despair of discovering an effectual remedy for so inveterate, so dismal an evil. But, though our most sanguine wishes afford us little probability of a radical cure, yet it ought by no means to deter us from the use, of such palliatives, as promise some mitigation, of the most troublesome & dangerous symptoms; and the great similarity between the diseases of the <u>animal</u> & <u>political</u> bodies may, perhaps, throw some light on the subject. A Surgeon, in order to cure a fresh bodily wound, does not apply harsh irritating & inflammatory medicines, but such as are mild softening and balsamic, which, by their sedative & healing qualities,

will have a tendency to lessen the pain & inflammation of the injured part, diminish the increased irritability of the nervous system, & thus make way for a speedy & effectual cure. As skilful physician likewise, when called to visit a sick person, carefully attends to all the complaints of his patient, & from his previous knowlege of every part & movement of the complex animal machine their contingent variations, & the diseases thence arising speedily discovers the latent cause of all his patient's complaints, &, with a seeming intuitive rapidity, unfolds every mysterious appearance, & readily prescribes such mild, yet efficacious medicines, as safely & effectually cure the disease. I will not deprive you of the pleasure of applying these facts yourselves to the object at present in view but only add, that while our political Surgeons and physicians, are humanely attempting the cure of the diseases already hinted at, let us who are the patients by our chearful submission to every necessary operation & readiness to follow their directions & advice, convince

every unprejudiced observer, that, if a cure is not effected, the fault shall not be ours. Be exhorted then my dear hearers & fellow members of this Society, to an unremitted endeavour to rescue your country from the brink of destruction. The fatal, the closing scene is fast hastening to a conclusion, & nothing but the united efforts of every friend to his country, every well wisher to the peace & harmony of civil society, can possibly avert the impending doom.

I freely own, I feel upon my mind, a strong impression of the public advantages, that would result, from such benevolence & unanimity; & I could wish, for the Interest of mankind, & of our peace in particular, that it may not be thought wholly of a visionary nature. I think I can see a strong & immediate demand upon us, for such a conduct, from the turbulent situation we are in, & the unusual occurrences that have passed before us of late.

It is difficult for me to look into the destiny of future ages, but without pretending to a Spirit of prophecy, may I not conjecture, that the rising generation, grown wise by our misfortunes, & by avoiding the Rock on which we have split, will stear the direct road to wisdom & temporal felicity by cultivating harmony & concord among one another, due respect to superiors, submission to lawful authority, & subjection to rulers; the consequences of which will be, friendship, unanimity, mutual acts of beneficence, & so conscientious a regard for the peace of society & the public weal that, to use the beautiful simile of an inspired writer, "they may beat their Swords into Plowshares & their Spears into pruning hooks" for all will chearfully concur, without reluctance, to promote the general good. Would it not be a noble effort of virtuous ambition, to anticipate this happy

happy period, this true golden age of our Country; to break through the prejudices & selfish spirit of the present age, & find out this true path to our real Interest? And what immortal honours, must crown the sacred head, of that man, who, possessed of a great & liberal soul, rather to be wished for than expected in our day, viewing the gastly wounds that are daily made in his Country, with the sympathetic emotions of a humane & generous spirit, resolutely determines, & happily accomplishes, its preservation & recovery? And who can tell but that the spirit of free enquiry & impartial reasoning, which this Society is designed to cultivate, may tend to bring about a reconciliation among contending parties, & lay a foundation for better times. That this may be the happy fruits of our united endeavours, may heaven grant it, for peace' sake, Amen.

Laws, in their most general signification, are the necessary relations arising from the nature of things. In this sense all beings have their Laws, the Deity his laws, the material world its laws, the beasts their laws, man his laws.

God is related to the world as creator & preserver, & acts therein by invariable Laws

Since we observe that the world though formed of matter void of understanding subsists through so long a succession of ages its motions must certainly be directed by invariable Laws

Brutes are likewise governed by Laws. They have natural Laws because they are united by sensation; positive Laws they have none because they are not connected by knowlege

Man, as a physical being, is like other bodies govern'd by invariable Laws. As an intelligent being he incessantly transgresses the Laws established by God & changes those of his own instituting.

As soon as mankind entred into a state of society human laws became necessary. Considered as inhabitants of so great a planet which necessarily contains a variety of nations, they have Laws relative to their mutual intercourse which is what we call the Law of Nations. As members of a society that must be properly supported they have Laws relative to the governors & governed; & this we distinguish by the name of politic law. They have also another sort of Law as they stand in relation to each other, by which is understood the civil Law.

No society can subsist without a form of government. The united strength of individuals constitutes what we call the body politic, & a conjunction of their wills the civil state.

Law in general is human reason. (p: 7)

Montesquieu says there are three species of government republican, monarchical & despotic. A republican government is that in w. the body, or only a part of the people is possessed of the supreme power; monarchy that in w. a single person governs by fixed & established Laws, a despotic government that in which a single person directs every thing by his own will and caprice

In a republican government when the body of the people

is possessed of the supreme power it is called a *Democracy*; when the supreme power is lodged in the hands of part of the people it is then called an *aristocracy* (p:8)

In all magistracies the *greatness* of the power ought to be compensated by the *brevity* of the duration. (p:15)

Virtue is the spring or principle of government in a popular state or *democracy* as also in an *aristocracy* though not so absolutely requisite.

Honor is the principle of government in a *monarchy* and *Fear* in a despotic government the nature of which requires the most passive obedience.

Every government has its nature & principle. The difference between the nature & principle of government is, that the former is that by which it is constituted, the latter that by which it is made to act. One is its particular structure, the other the human passions which set it in motion. (p:20)

Monarchies do not permit of so great a simplicity of laws as *despotic* governments. For in monarchies there must be courts of judicature; these must give their decisions; the decisions must be preserved & learnt that we may judge in the same manner to day as yesterday, & that the lives & properties of the citizens may be as certain & fixed as the very constitution of the state.

If we examine the set forms of justice with respect to the trouble the subject undergoes in recovering his property, or in obtaining satisfaction for an injury or affront, we shall find them doubtless too numerous; but if we consider them in the relation they bear to the liberty & security of every individual, we shall often find them too few; & be convinced that the trouble, expence, delays & even the very dangers of our judiciary proceedings are the price that every subject pays for his liberty (p: 82)

Experience shews us that in countries remarkable for the lenity of their Laws, the spirit of the Inhabitants is as much affected by slight penalties as in other countries by severer punishments

It is an essential point that there should be a certain proportion in punishments, because it is essential that a grea[t] crime should be avoided rather than a smaller, & that which i[s] more pernicious to society rather than that which is less. (p: 1[illegible]

There is no word that admits of more various significatio[ns] & has made more different impressions on the human mind than that of Liberty. The Russians in the time of Peter the[illegible] thought liberty consisted in wearing a long beard. Some th[ink] it consists in being governed by their own laws. Some have annexed this name to one form of government exclusive of othe[rs]

Philosophical liberty consists in the free exercise of the will. Political liberty consists in a right of doing whatever the Laws permit.

It is on the goodness of criminal Laws that the liberty of the subject principally depends. Liberty is in its highest perfection when criminal Laws derive each punishment from the peculiar nature of the crime. (p: 212)

In every government there are three sorts of power; the legislative & the executive in respect to things dependent on the law of nations; & the executive in regard to matters that depend on the civil law called likewise the Judiciary power. (p: 174)

Ladies & Gentlemen

Sensible of the distinguishing honor you do me, in condescending to give me your presence and attention at this time; I heartily & sincerely wish I had it in my power to say something on the occasion that would entertain you agreeably & in the end prove either amusing or advantageous to you.

I readily confess that the sight of so respectable an audience, animated with the novelty of the subject and flushed with the highest expectations of hearing something extraordinary & agreeable; & at the same time a consciousness of my own incapacity to execute it in so finished a manner as I could wish or the importance of the subject well deserves, give me so great a diffidence of myself that I am desirous of asking your pardon beforehand for presuming to impose upon your judgments & patience by detaining you with the delivery of so bad & imperfect a performance.

I hope however that the importance of the subject and the honest intention of the author will at least with the candid & the generous sufficiently apologize for the attempt, and beg that you may not suffer your expectations to be too much raised after having confessed myself so incapable of gratifying you in what I ardently wish I was better capacitated for.

Next to an anxious care and concern for the welfare &
eternal felicity of the immortal soul, that nobler part, the
emanation of the divinity; the preservation and temporal w
being of our bodies demand our particular attention.

These, tho' so wonderfully constructed & elegantly form
that the most luxurious fancy cannot point out the least imperfe
in them, or the most exuberant wish desire that they had bee
more perfectly finished; yet, from their being made up of su
an infinity of nice & intricate parts, & being obnoxious to num-
less accidents & irregularities; few, very few ever arrive to an
competent knowledge of their own amazing structure and co
consequence become capable of knowing & distinguishing th
true causes that may injure or molest them, or of rectifyin
and adjusting them when impaired.

Had man continued in his primeval rectitude, ha
he withstood the temptation of his grand deceiver; the stud
of the healing art, now of so much importance to the hum
species, had been altogether useless and unnecessary. In th
truly happy state man enjoyed an uninterrupted scene of hap
felicity; no sudden vicissitudes of heat & cold, wet & dry or
unfriendly to our bodies ever happened, all was tempera
serene and fair; the purple gore ran ever fluent throu
its pervious canals without hesitation or delay, & bloom
health shone forth with all the beauty of the most finis

shape, complacent look, & rosy complexion. Pain disease and death were then unknown: but now how quite the reverse is too well known to all! And the necessity of cultivating medical science in order to remove or alleviate as far as may be the numerous diseases to which we are daily and hourly exposed is so obvious that it would be imposing upon your understandings to suppose you not fully convinced of it

The more useful this branch of science is when properly cultivated, the more is it to be wished that none but such as are duly qualified for the important task would dare to attempt it. But such is our misfortune that instead of having it practised only by men of superior abilities, who have spent a number of years in the regular study of every part of the profession & who have the joint suffrage of men of learning and experience as well as a series of successful practice to vouch for their being well skilled in what they have seriously undertaken: instead I say of such truly useful men, well skilled in their profession, the country is over-run with a set of monsters of all others the most detestable, I mean empirics, quacks or ignorant

pretenders to the divine the health-giving art of physic.

I beg your patience therefore a few minutes while I lay before you a few of the evil consequences that attend the countenancing these dangerous people

To lay before you all the evil consequences that naturally & necessarily follow the practising the healing art without being first properly initiated therein, of the trusting so precious & invaluable a treasure as our life & health to the care of people entirely ignorant of the human frame would be a scene truly affecting & require more time than I have prescribed myself at present

It may perhaps be sufficient just to mention some of the most unavoidable misfortunes that attend it.

In the first place the countenancing of quacks greatly discourages the true & regular study & practice of the healing art, & has a direct tendency to discountenance regular bred physicians. Where is the encouragement for a man to banish himself from all the endearing ties of friends and relations, to seclude himself from the company of his agreeable companions, to deny himself every innocent amusement, to give himself entirely up to a long series of painful study and

diligent enquiry, to spent the prime of life and often the bulk of his fortune in making himself acquainted with every branch of physic, upon a principle of humanity that thereby he may administer the most skilful aid to the calamities of his distressed fellow mortals; if after all he must be put upon a level with the illiterate quack, be treated with no more respect or defference, & be considered as entitled only to the same gratuity with the daring empiric who has never expended either time or money in accomplishing himself? Let unbiased reason decide this matter, & let every true lover of science, every friend to the improvement of the healing art, or whose soul feels a tender pity for the misery of his distressed friend or neighbour, resolve with unshaken resolution and inflexible firmness to patronize the real physician, to encourage medical literature & suppress empiricism

Nothing gives people in general more erroneous & prejudicial notions concerning physic than quacks, for an ignorant knavish, lying & impudent fellow will always seduce the gross and credulous mass of people incapable to judge of, & estimate any thing rightly,

and adapted to be the eternal dupes of such as are base enough to endeavour to dazzle their weak understanding by which method these vile quacks will certainly defr them as long as they are tolerated.

Without the least knowledge or experience, & offensive armed with three or four medicines, whose nature they are as thoroughly ignorant of, as of their unhappy patients diseases; and which medicines being almost all violent ones, are certainly so many swords in the hands of madm Thus armed & qualified ƒ say, they aggravate the slightest disorders, & make those that are a little more considerable mortal; but from which the patients would have recovered if left solely to the conduct of nature, & for a still stronger reason if they had confided to the guidance of her experien observers and assistants.

The robber who assassinates on the high way, leav the traveller the resource of defending himself, & the chanc of being aided by the arrival of other travellers; but the poisoner who forces himself into the confidence of a sick person is a hundred times more dangerous and as just an object of punishment.

What a melancholy scene presents itself to our view w

we behold a person daring to enter upon the practice of physic without being properly initiated in the science or instructed in the important duties of the profession. If not past all feelings of humanity what compunctions of conscience, what remorse must fill his breast from practising at random & in the dark, not knowing whether his prescriptions will prove a wholesome remedy or a destructive poison. To discover the nature of an uncommon disease, or to account for an unusual symptom puzzles his invention. Ignorant of every true principle from which, by a just reasoning, he might be able to deduce practical inferences, he knows not what prognostic to make, or what plan of treatment to observe. Unsteady and irresolute, he attempts a variety of means; such as either avail not, or such as heighten the danger of the disease, already too violent. He may thus interrupt the salutary attempts of nature, or, not knowing how to second them, tamper with the life of his patient, & idly waiting to see what nature herself is capable of doing, neglect to succour her, till it is too late, & the fatal hand of death is just closing the gloomy scene. Wretched is the case of those whom chance or misinformed

judgment shall throw into his hands, to fall victims of his temerity. Great is the havoc which his ignorance spreads on every side, robbing the affectionate husband of his darling spouse, or rendering the tender wife a helpless widow – increasing the number of orphans; mercilessly depriving them of their parents' support; bereaving the afflicted parents of their only comfort & hope, by the untimely death of their beloved infants, & laying whole families desolate. Remorseless foe to mankind! actuated by more than savage cruelty! hold, hold thy exterminating hand!

But the blindness of people in general with respect to these maleficient beings is inconceivable, in suffering themselves to be imposed upon by their barefaced arrogance. Give me leave therefore to inform you, & it cannot be repeated too often that whatever ostentatious dress and figure some of these impostors may make, they are constantly vile wretches, who, incapable of earning a livelihood in any honest way, have laid the foundation of their subsistence on their own amazing stock of impudence & that of the weak credulity of the people: that they have no scientific knowledge of the art they boldly dare to practise: that all their lowlived insinuations & accounts of great cures

they have performed are mere forgeries. If among the prodigious multitudes of people who take their medicines some of them should recover, which is almost physically impossible must not sometimes be the case; yet it would not be less certain that they are a pernicious destructive set of men. A thrust of a rapier into the breast has saved a man's life by seasonably opening an imposthume in it which might otherwise have killed him; and yet internal penetrating wounds with a small sword are not the less mortal for one such extraordinary consequence. Nor is it even surprizing that those daring Empirics who kill thousands of people, whom nature alone, or assisted by a physician would have saved, should now & then cure a patient, who had been treated in vain before by the ablest physicians. Frequently patients of that class who employ these quacks (whether it has been that they would not submit to the treatment proper for their distempers; or whether the real physician tired of the intractable creatures has discontinued his advice & attendance) look out for such Doctors as assure them of a speedy cure, & venture to

give them such medicines as kill many & cure one (who had constitution enough to overcome them) a little sooner than a justly reputable physician would have done.

The credit of these vile yet tolerated cheats, who rob mankind not only of their money but what is dearer to them their health, & who horribile dictu! are constantly imbrued with acts no less horrid & detestable than downright homicide; their credit I say would quickly vanish could each of their employers be persuaded of what is strictly true, that except a little more tenderness and agility of hand, he knows full as much as his Doctor; & that if he could assume as much impudence he would immediately have as much ability, would equally deserve the same reputation, & to have the same confidence reposed in him.

The very meanest trade requires some instruction: A man does not commence even a cobler, a botcher of old leather without serving an apprenticeship to it; and yet no time has been served, no instruction has been attended to by these pretenders to the most necessary useful & elegant profession. We do not confide the mending the cleaning of a watch to any who have not spent several years in considering how a watch is made: what are the requisites

& causes of its going right, & the defects & impediments that make it go wrong: and yet the preserving and rectifying the movements of the most complex, the most delicate & exquisite, & the most estimable machine upon earth is entrusted to people who have not the least notion of its structure; of the causes of its motions, nor of the instruments proper to rectify their deviations.

The most genuine & excellent physicians, those extra-ordinary men, who, born with the happiest talents, have began to inform their understandings from their earliest youth; who have afterwards carefully qualified themselves by cultivating every branch of physic; who have sacrificed the best & most pleasurable days of their lives to a regular & assiduous investigation of the human body, of its various functions, of the causes that may impair or embarrass them, and informed themselves of the qualities & virtues of every simple & compound medicine; who have surmounted the difficulty & loathsomeness of living in Hospitals among thousands of patients; & who have added the medical observations of all ages and places to their own; these few and extraordinary men I say still consider themselves as short of that perfect ability and consummate knowledge which they contemplate & wish

for, as necessary for guarding the precious depositum of hum[an]
life and health confided to their charge. Nevertheless we
see the same inestimable treasures intrusted to gross
& stupid men, born without talents, brought up without
education or culture; who frequently can scarcely read; who
are as profoundly ignorant of every subject that has any
relation to physic as the savages of Asia; who spend most
of their waking hours in excess & debauchery; who often exercise
their horrid trade merely to find themselves in strong drink
& execute it chiefly after they are drunk; who, in short, be:come physicians only from their incapacity to arrive at
any trade or attainment. Certainly such conduct in
creatures of the human species must appear very astonish:ing and even melancholy to every sensible thinking man
and constitute the highest degree of absurdity & extravagance.

Should any person duly qualified enter into an
examination of the medicines they use, & compare them
with the situation & symptoms of the patients to whom
they give them, he must be struck with horror, & heartily
deplore the fate of that unfortunate part of the human
race, whose lives so important to the community are
committed to the charge of the most murderous set of beings

Before I conclude suffer me a moment to bespeak the attention of the regular bred physicians.

And now my worthy brethren of the faculty, you who in spight of all the obstacles & discouragements that lye in the way, have, with a noble elevation of soul & an earnest desire of becoming skilled in your profession, ascended the regular steps of science, took possession of the esculapian stores & are now with conscious humanity putting in practice those salutiferous maxims you imbibed in the schools of physic; to you I now, with unspeakable pleasure address myself. You no doubt meet with much trouble from the numbers of invidious quacks that swarm around you, and are often mortified greatly to see those worthless miscreants meanly insinuating themselves into the confidence of your diseased neighbour & with unwearied assiduity striving to vilify your person character and conduct. But let not this nor all the other low-lived artifice made use of by them in the least dispirit you from persisting in the regular path of practice. — Ever keep in view the dignity of your profession. — Place before your eyes the illustrious examples of your venerable

predecessors. — Tread in their steps, become indefatigable in cultivation of medical literature, & be earnest to bring it to perfection. — The rewards of the rich, the countenance of the great & wise, & the justly merited esteem of the good & virtuous which outlasts the fleeting years of human date will not be wanting for your encouragement. — What is a most pleasing reflection, those who have been distressed by irksome diseases & relieved by your skill, will own themselves indebted to you for the life you have prolonged. — You will ever be considered as the ornament of your profession, & be justly stiled guardians of the health of mankind. — Look down with just contempt on those diminutive wretches who being entirely ignorant of physic boldly arrogate to themselves the venerable title of physicians. & treat them with with that indignity they really deserve. Though the poor ignorant deluded vulgar may be led away by the false show & specious insinuations of these quacks, yet assure yourselves you will be warmly patronized by all the sensible & judicious part of mankind; and always remember that the patronage of a single person of sound learning good judgment & strict candor will be a greater honour to you, & more worthy your ambition

than all the senseless din of the ignorant vulgar.

No doubt our private interest will suffer by these base creatures daringly encroaching on our sphere of practice; but its not in their power to traduce us in the opinion of the wiser part of mankind or lessen our credit with them, and what is a still greater encouragement, if we resolve upon a constant attention to honor and integrity in our profession we shall be making daily accessions to the number of our valuable friends and patrons till in process of time we shall be enabled to triumph over all those that maliciously strive to effect our downfall & ruin, & when the supreme being sees fit to call us off this mortal stage, leave behind an unblemished character & unsullied reputation; and our survivers will ever mention our names with respect and veneration.

Celsus (No. 1)

Ut alimenta sanis corporibus agricultura, sic sanitatem aegris medicina promittit.

Celsus.

After having patiently waited, till the patrons of american liberty, as well civil as religious, that dared to stand up in vindication of our ~~natural~~ constitutional rights & freedom, against the torrent of ministerial tyranny and the oppressive yoke of episcopal prelacy, have exhausted themselves or 'tis'nt fit to make a decent retreat ~~[illegible]~~; give me leave to address the public on a very different subject: a subject so important & interesting to every individual as well as to the whole community that it ~~requires~~ deserves an abler pen than I have the vanity to think I am master of to do it justice. But as no person has ever yet attempted the like, I have presumed to try my weak & inexperienced talents that way; not with any expectation of being applauded, so vain a wish would frustrate itself, but from a real regard for the species & a desire of contributing my mite for the public good; hoping some person, better capacitated for such an undertaking, will, from my poor example, prosecute the subject to better purpose.

Is it not a matter of great admiration that the honorable legislative bodies in these american colonies should have judg'd it necessary that the practice of the law should be restricted by legal authority & subjected to certain regulations while the practice of physic is left wholly unrestrain'd and unnoticed, as if the preservation of health was of less importance than securing an estate, or the removal of bodily pain and disease a matter less worthy a legislator's attention than the recovery of a few shillings or pounds by a legal process? I would fain persuade myself it is not owing to any criminal neglect in those venerable Gentlemen that medical science, deservedly esteem'd of the greatest utility to mankind, has been so ~~little~~ patronized by them, that Empirics have never been discountenanced by legal edict, in the same manner as ignorant pretenders in the law are in many of our provinces; but I would rather impute it to inadvertency, or to not duly considering the great advantages that would accrue not only to the science of medicine itself but to the public in general was the practice of physic regulated by ~~proper~~ laws ~~& restricted by certain laws~~. — To lay open to the public the evil & dangerous consequences that attend the present irregular & unrestrain'd manner of practising physic & to convince them of the expediency and necessity for its being subjected to certain regulations, is the design of the following observations. Should they answer those ends the author will have the pleasure to find he has not

labored in vain; and should they fail of success he will nevertheless have the consolation that his intentions were honest & laudable & that it was from principles of humanity & not a puerile desire of commencing author, that actuated him in the present undertaking.

As health of body is the most valuable blessing mankind can enjoy under heaven, the art of physic which is immediately employ'd in preserving good & restoring lost health ever has been, and still is look'd upon as the most useful & necessary branch of science, next to that which treats of the welfare & eternal felicity of our immortal part, since multitudes of mankind have been, & daily are indebted to it for a great part of the happiness of their lives. For a proof of this I appeal to those who have long labored under some severe & painful disease till by the assistance of this salutary art they have been restored to perfect health.

But though the science of medicine is of such utility to mankind when practiced by men of superior skill who have made themselves thoroughly acquainted with every branch of the profession; yet when left unguarded & unrestrained, when any person that has boldness & impudence enough however ignorant of physic is allowed full liberty to set himself up for a physician & by exercising all the arts of fraud & insinuation suffered to force himself into the confidence of the ignorant & credulous part of mankind which is by far the greater number, the worst of

consequences must inevitably ~~happen~~ follow. — Was mankind in general capable of judging for themselves in this particular, or could every person be sensible of the abilities of such as pretend to practice physic so as to be able to ~~distinguish between~~ the regular physicians from the pretended ~~quacks~~ ones, such a liberty as quacks at present are allowed would not be a real grievance; but as medicine is a science concerning which those who have not made it their study can have no adequate Ideas, reason & daily experience teach us the necessity of having it subjected to certain regulations in order to prevent imposition & avoid those fatal consequences we are daily witnesses of, from the presumptuous administrations of quacks & ignorant pretenders to medical skill.

What renders the grievance still greater & more insupportable is that maltreatment in the practice of physic is irretrievable, death being frequently the consequence; the unhappy patient becoming a prey to the rashness of his ignorant daring prescriber, for we generally find those of the least skill in physic are the most daring & inconsiderate. A person well skilled in the profession, considering the importance of life, & knowing how precarious are the effects & operations of most medicines, proceeds with caution & deliberation in what he does, and foreseeing wherein the greatest danger lies reasonably applys himself to avert it, while the ignorant pretender neither knowing nor fearing any danger & without considering the consequence, instantly has recourse to his boasted catholicon for the cure of every disease, & instead of assisting nature in the removal of it, interrupts her salutary efforts & precipitantly hastens his unhappy patient to the close of the tragic scene.

It's natural for people in distress to catch at every appearance of assistance however improbable: the bare possibility of relief renders the distrest sufferer anxious of trying any thing that offers, hence the poor sick patient too readily confides in the peremptory assertions of a speedy relief from the arrogant Quack & by that means neglects applying to the regular bred physician till his disorder has gaind ground so far as to be irremediable.

By permitting quacks to have the same liberties and immunities as the regular bred physician greatly discourages the study of medicine, it deters persons otherwise of just & liberal sentiments from putting themselves to a further expence to gain knowledge than what is sufficient to get money & thereby puts a stop to the improvement of the healing arts; for if the daring empiric who has never expended either time or money in rendering himself acquainted with the several branches of medical literature may expect the same patronage & gratuity with the real physician who has devoted a series of years in making himself thoroughly master of his profession, who will be at the cost and trouble of a long & painful course of study to no purpose? and how mortifying must it be to a person who is regularly initiated in his profession to be put upon a level with the illiterate quack, be treated with no more respect or defference & be able to claim no privileges superior to him? This must be allowed by all un-

unbiased persons as incompatible with that respect & veneration which the sons of Britain have ever discovered for persons of learning & merit, and I flatter myself that the Gentlemen of the faculty will not in a short time have reason to complain of the irregular & unrestrained manner of practising physic that at present unhappily prevails among us, as I doubt not but our venerable legislators begin to be convinced of the necessity of their taking the same into consideration & of the great utility that would accrue to the public by subjecting it to legal restrictions. The example of all the civilized parts of Europe would alone I think be a sufficient warrant ~~alone~~ for so doing, but the real & apparent advantages that the people in general have recieved from having the practice of physic regulated by law in England, France, Holland, & Germany is an unanswerable argument to prove the necessity & utility of having it put upon the same footing in our american colonies

What obstacles are there in the way to hinder our having so laudable & advantageous a measure put in execution? Have we not now every advantage for studying physic in a regular scientific manner in the medical college of Philadelphia under the tuition of men celebrated for their medical skill & erudition throughout the literary world: which medical school though in its infancy at present

yet from its flourishing state & the rapid progress some of its sons have made under its auspices, promises in a little time to rival any institution of the kind in the learnd world. — From this nursery a number of young Gentlemen are annually transplanted to different parts of the continent imbued with a scientific knowledge of all the branches of medicine & enriched with the medical skill & experience of the several venerable professors of that flourishing seminary. If then regular bred physicians were encouraged & patronisd by law, if instead of allowing every one however ignorant of ~~physic~~ medicine full liberty to practice physic at random, to the endangering the lives of multitudes, our worthy legislators would in their wisdom see fit to prohibit any, but such as are graduated by some medical college or licenced by a certain number of graduated physicians who upon strict examination of the candidate find him worthy of such a privilege, to practice physic among us, I am persuaded the advantages that would immediately ensue would convince them of the justness & propriety of so doing; for by that means all parts would in a little time be supplied with regular bred physicians instead of those poor stupid ignorant creatures that now swarm in town & country going about imposing upon the credulous deluded

populace extorting from them vast sums of money & what what is worse frequently depriving them of every prospect of future health by their rash & unskilful treatment of them.

Was the practice of physic thus regulated by law, was none but such as are regularly initiated permitted to practice physic, the weak & ignorant would be protected from being imposed upon, concord & amity would more universally take place among practitioners of the healing art, the country throughout would shortly be supply'd with worthy skilful physicians. young Gentlemen who are studying physic would have a powerful incentive to industry & application, and the science of medicine itself would reap great advantages & receive great improvements therefrom.

Dear Sir   Bridge Town March 25th 1769

As observations on the different constitutions of the air, and exact & genuine historical accounts of the diseases cotemporary therewith; are the best & surest methods that can be taken, to improve the practical part of physic; every attempt that way, however triffling & imperfect, must of consequence be esteemed useful & laudable: especially here in America, where medical science has just began to be cultivated in a regular scientific way, & where any thing of this kind has scarce ever been attempted.

Hippocrates who, from the improvements he made in our art, & the accuracy of his observations, is justly stiled the parent of physic, has left us many valuable things on this subject, in his books *de morbis epidemicis* & *de Aere locis & Aquis*. But after him, this very useful part of our profession, seems to have been almost entirely neglected; physicians, either from ostentatious views, or in compliance with the custom of the times, choosing rather to indulge their fertile imaginations in framing subtle hypotheses & fine spun theories, rather injurious than beneficial to the true & genuine practice of the healing art, than attend carefully to the various phenomena of diseases & constitutions of different seasons; 'till *Sydenham*, the modern *Hippocrates*, whose incomparable Treatise on Epidemical diseases, wrote upon the model of his venerable predecessor, convinced physicians of their error, & of the great improvements that might be made in discovering the nature & cure of diseases

by an assiduous attention to these particulars. Many celebrated physicians have therefore, since his time, devoted themselves to this particular study, as Dr. Huxham of Plymouth, Dr. Wintringham of York, Dr. Ramazini of Modena, & many others whose works have conduced more, towards improving the practice of physic, than all the numberless volumes of hypothetical reasonings & fine spun theories of many ages before.

But even now, after all the improvements that have been made this way, our knowledge of the constitutions of the air, its effects on human bodies, & the epidemical diseases it produces, is very inadequate & imperfect.

The want of a proper meteorological aparatus, and a multiplicity of avocations wholey engrossing my time, have prevented my making any observations as yet this way worthy of notice, except some cursory remarks I have lately made on a disease that at present prevails epidemically here, proving uncommonly mortal, which I shall now endeavour to communicate to you, in order to be laid before the american Philosophical society for promoting useful knowledge, should you judge them worthy of their notice.

I am fully aware of my own inabilities, & readily confess myself incapable of doing justice to the subject before me. But in an attempt where public utility is the prevailing motive, & the welfare of our fellow creatures the only aim & end; I hope the excellency of the design will be deemed a sufficient apology for my presumption in undertaking the same.

Lord Bacon observes, that the assistance of the common workman is as necessary towards compleating an edifice, as that of the master builder

and why may not attempts of this kind, tho' very imperfectly executed, serve to throw some little light on the nature & cause of the diseases that prevail in our climate, especially as others, better capacitated for doing the same, decline the task?

The last summer & autumn were remarkably cool and dry; a consequence of which was, that we had fewer intermittents here than is common in this low campaign country, for it is evident from experience, that nothing predisposes the human body more to the attack of an intermittent than heat & moisture combined, as they so greatly relax the whole system that the solids are unable to act upon the circulating fluids with sufficient impulse to assimilate them properly & keep them in a proper degree of fluidity; hence proceeds a lassitude, inertness, & all the other disagreeable symptoms that arise, to use the words of that elegant medical poet Dr Armstrong.

"From raw-spun fibres, idle & unstrung
"Skin ill perspiring; and the purple flood
"In languid eddies loitering into phlegm":

In this relaxed state of the system all the secretions & excretions are irregularly performed, hence succeeds a cacochymia from an imperfect separation of those particles which ought to be eliminated from the body. But these are not all the ill consequences of a too relaxed state of the body; the nerves, those extremely tender & delicate parts of the animal frame, that are immediately connected with the sentient principle, likewise suffer, becoming so very sensible as to be affected from the slightest cause; hence the constant & regular accession of the paroxysms of an intermittent fever, from the accumulation of a sufficient quantity of morbific matter to affect the nerves, now in

a morbid state of sensibility, so as to excite spasms, horripilation, and a subsequent fever.

About Christmas the weather was very cold, wch soon moderated, & the month of January 1769 was very warm & wet for the season of the year, but about the first of February it changed suddenly from warm & moist to very cold & dry, which occasioned a very troublesome cough to prevail universally among us, & at the same time a violent disorder of the peripneumonic kind began to rage with uncommon fury, carrying off almost every one that was attacked with it. As it was attended with some very particular symptoms, & proved so very mortal, I shall be more particular in drawing up the history of it.

Though the disorder I am about to describe appears evidently to be a peripneumonia notha, yet by attending carefully to all its concomitant symptoms, I find it differs greatly from that described by Sydenham, or indeed any other writers, as well as from any I ever met with before. Its first approaches are very slow & gradual. The patient, for several days before the disorder begins, complains of a troublesome cough, impaired appetite, & slight pains in the limbs, head & back, then he is seized with a horripilation more or less violent that lasts several hours, & is succeeded by a fever, when the pains increase & fix themselves in the breast & side, but they are never very acute unless the disorder is complicated with a pleurisy which is sometimes the case. The cough likewise now becomes more violent than before, & proves extremely troublesome to the patient, as it is uncommonly hard & dry seeming to proceed from the bottom of the thorax, & straining the whole system by the violent concussions it gives the body. The patient complains of pain in the head especially

after a fit of coughing, the pulse is very small, hard, & quick, feeling like a knitting needle to the touch, this I have always observed to be the case, & it has always afforded me a sure criterion of the presence of this disorder, especially when I observed it to be accompanied with the hard dry cough above described. The fever has manifest exacerbations every day, being the highest in the evening & in the morning almost entirely absent. The breathing is very short & laborious. The patient is thirsty and complains of great weakness & feebleness. The urine at first appears turbid like unsettled small beer but a little deeper coloured, after some days there is a nubeculous appearance in it & near the crisis it deposits a furfuraceous sediment

The patients expectorate very little, much less than is common in this species of peripneumony, nor do they feel so sensible an oppression at the Breast as is generally the case, for in the most advanced stage thereof they seem little sensible of pain, though the increased difficulty of breathing, & smallness of the pulse, indicate an increased degree of obstruction in the course of the blood through the Lungs.

As the disease advances all the above symptoms increase, the pulse becomes weaker & smaller, the cough & difficulty of breathing more troublesome, the fever becomes more violent, the tongue & throat grow sore, appearing first covered with white specks resembling aphtha, afterwards black & sloughy, till at length the patient becomes delirious. the pulse grows weak & intermits & insidious death advancing with tardy steps closes the scene & pays the debt to mortality, generally about the 7th

or 9th day, sometimes sooner, & sometimes not till the 12th or 13th day
Constat, aeternâ positumque lege est,
Constet ut genitum nihil.

Sydenham Boerhaave & many others advise only a single bleeding in a bastard peripneumony, but in the present one I found it necessary from experience to repeat it several times especially if I was not called to the patient immediately after being taken; the blood every time appearing sizy like pleuretic blood.

Laxative medicines by cleansing the primae viae and by exciting repeated revulsions from the breast seemed to afford the most sensible relief. Juleps made of the Sal volat: with a few drops of Tinct: Thebaic by promoting a gentle diaphoresis proved serviceable, and Blisters apply'd to the wrists & affected part were likewise attended with some advantage. But these with all the other means made use of, rarely proved sufficient to overcome the disease; it generally proved inflexible to all remedies & with relentless fury has snatched away numbers from among us.

Whether the sudden appearance of this epidemical disease was owing to the great & sudden changes in the sensible qualities of the air above mentioned or not, I shall not take upon me to determine. Tho' daily experience evinces that changes in the sensible qualities of the air are productive of particular diseases; yet I am inclined to think with the judicious Dr. Sydenham that much also depends on some latent and inexplicable alterations in it. If not, why is not every

similar change in the sensible qualities of the air productive of similar diseases at all times? And why are not all epidemical diseases consequent on such similar changes of the air always of the same nature?

I am

Dear Sir

Your most obliged

& very humble Servant

Jonathn. Elmer

P.S. Whether you should judge the above fit to be laid before the Society or not, I should be glad to have a copy of it (after having undergone such corrections as you shall think necessary) sent to Messrs. Bradfords in order to be inserted in their paper as being the one generally taken here. — I am much pleased to hear of the coalition of the two philosophical societies as thereby every kind of useful knowledge will be more incouraged & improved. I am therefore more than ever desirous of becoming a correspondent member of that venerable body. Should you apprehend any probability of my being admitted I should esteem your interest therein as the highest mark of favor & friendship

To Jno. Morgan M.D.

An

Inaugural Dissertation

On the case of

A suppressed Catamenia

Delivered before the professors and trustees of the College of Philadelphia at the second private examination on Monday June 15th 1768 as candidate for the degree of Bachellor in Physic.

Phoebe, fave, novus ingreditur tua templa sacerdos.

Tibullus

A B— a woman aged 27 years, heretofore of a healthy habit, being abroad in the night time in the month of February, her menses having appeared the day before, met with something that occasioned a sudden fright, on which her menses disappeared— Next morning she was seized with a pain in her back and stomach, in the course of some days her appetite was much impaired, she became thirsty, & laboured under a troublesome cough.

Quaeritur, Quis morbus? Ratio symptomatum? prognosis? & methodus medendi?

The above case, which is to afford the subject of the following dissertation, appears, from the relation of it, to be a suppression of the menses, & all the symptoms that succeeded seem to be owing to that cause.

In order to proceed methodically, as well as to account rationally for the sudden disappearing of the menses in the present case & to explain the rationale of the subsequent symptoms, it will be necessary to premise a brief account of menstruation.

No subject in physiology has more frequently employ'd the pens of the ablest writers in all ages, nor has more nice & subtle hypotheses been framed for explaining any one particu=lar in the animal economy than that of the catamenial phe=nomenon, & yet the matter remains sufficiently obscure to afford much room for altercation among the literati. It cannot therefore

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be expected that I should enter into a compleat discussion of the subject as that would far exceed the intended limits of this short essay. It will be sufficient just to touch upon the same before we proceed to speak of a retention of the menses & the method of cure.

The menses are a periodical discharge of blood through the vagina, happening most commonly about once a month[a], & sometimes only every five or six weeks[b].

They generally commence with us about the age of fourteen, or nearly about the time that girls arive at their acme or full stature[c], and naturally cease between 45 & 50[d]; but great difference is observed as well with regard to the time of their first appearance, as of their natural cessation. In warm climates they generally appear sooner & cease sooner than with us[e], but in the more northern regions they appear much later, frequently not till upwards of 20 years, & continue proportionably longer before they finally disappear: nay in the same country considerable differences are observed in these respects.

As to the duration of each period nothing certain can be determined, as that so frequently varies, not only in different climates, but in different women in the same climate, & even in the same woman in different circumstances & periods of her life.

(a) Vanswieten's Comment: §1284. Astruc diseases of women vol i p. 11.
(b) Freind's emmenalogia p 2.
(c) Astruc loc: citat:, Freind, Vanswieten loc: citat:
(d) Vanswieten §1284 Hoffman Tom i, Freind p 2 Astruc vol i p 11. Haller, Vanswieten Astruc Boerhaave Smellie, (e) Cleghorne dis: Minorca p 53

Some authors extend it to 8 or 10 days,[f] while others restrict it to 3 or 4,[g] the latter of which I believe in general come nearest to the truth, tho' there are undoubtedly instances of women of a sanguine habit of body who live high & lead an idle sedentary life that menstruate for 8 or 10 days or perhaps longer, while others of a masculine habit, born to earn a scanty subsistance by a more laborious avocation, from constant exercise & greater consumption of their fluids do not menstruate above 2 or 3 days at most.

The quantity of blood discharged at each period is also very inconstant, owing to difference of climate as well as constitution, age, and way of living. Hippocrates[h] computes it at two attic hemina which is generally reckoned to be equal to 20 ounces avoirdupoise, with whom Freind[i] agrees; but daily experience evinces that this is too high a calculation in common, & that those who reckon it only six or eight ounces[k] come nigher the truth. Tho' women who live in warm countries, feed high, & lead a sedentary life menstruate much more copiously than those who inhabit the more northern regions, live sparingly, & use much exercise.

Two questions offer themselves to be considered before we proceed to treat of the causes of menstruation viz.[t] from whence does the menses proceed, whether from the Uterus or Vagina?

(f) Vanswieten Comment: Haller Element: physiolog: Tom 7.
(g) Vanswieten, Hippocrates de morbis mulierum lib 1 § 5. Freind p 2 Astruc p 11.
(h) De morbis mulierum lib 1 § 5. (i) Emmenologia p 2.
(k) Astruc diseases of women vol 1 p 11, Vanswieten § 1284, De Gorter. Smellie.

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and whether is the menstrual blood discharged from arteries or veins?

Many[l] from observing the menses to flow in the time of gestation & after the extirpation of an uterus that was prolapsed, concluded that the menses were discharged from the vagina; but from the observations of later & more experienced anatomists particularly the celebrated Morgagni[m] who dissected many women that died during menstruation & always found the internal surface of the Uterus marked with a great number of bloody spots while nothing of the like appeared in the vagina, together with ocular demonstration in prolapsus uteri, it is now more generally believed to be discharged from the uterus only. Hoffman[n] Freind[o] and some others imagin the discharge is both from the Uterus and Vagina.

The similar discharges of the Hemorrhoids & Lochia being evidently from the veins, as well as the slowness with which the menses flow, generally guttatim, seem to argue that the menstrual blood is actually discharged from the veins, & many are of this opinion;[p] but as the uterus is allowed to have exhaling arteries that continually distil a fine fluid for moistening its internal cavity, it seems more probable and aqueable to the order of nature in almost every other secretion, as well as

(l) vid Haller's Element: tom: 7 & the authors quoted by him.
(m) Adversar: Anatomica 1 § 33 vide etiam Vanswieten § 1284. & Astruc on the diseases of women vol: 1.
(n) System: med: rationall Tom 1. (o) Emmenologia p 33.
(p) Sympsons system of the womb. Jentys lectures vol: 3 Astruc.

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consistent with just observation,(q) that the menstrual blood is discharged through these exhaling vessels by a kind of *error loci* or a dilatation of them so as to admit red blood in the place of a thinner humor that transudes at other times.

Thus far we have been able to speak with some degree of certainty being supported by experience & anatomical demonstration; but to explain what are the true causes of menstruation is a task much more difficult & abstruse, and even after all that has been said by so many on the subject is far from admitting of a satisfactory solution.

Many from observing that the *menstrual* periods happen frequently in conjunction with the *lunar* periods, & by observing the influence of the moon on the tides, have imagined, that the menses were also owing to the influence of the moon on the bodies of females; but this opinion as well as that of a *ferment* in the uterus, so strongly contended for by *De Graaf*, *Charlton* *Bayle* & many others of the last century, are so absurd & carry with them so little probability that they have very few patrons at present.

The opinion of a plethora being the cause of the menstrual discharge is now much more commonly recieved & carries with it a much greater degree of probability; but whether this plethora is *universal* or *partial* of the uterine vessels only is a dispute. The elegant Dr. *Freind*(r) & most writers since

(q) *Kaau* de perspiratione §199 Halleri Elem: physiolog: Tom vij
(r) Emmenologia. *Boerhaave* in particular strongly defends this hypothesis tho' his learned commentator *V: Swieten* seems rather inclined to favor the later doctrine of a partial plethora.

him have adopted the opinion of a universal plethora, & indeed the menses not appearing till a certain period of life in which women have arrived at their acme or nearly, their ceasing spontaneously in advanced age, & gravid women & those that give suck being most commonly destitute of them, as well as the symptoms that precede their eruption, or succeed their retention, seem to be so many proofs that this is the true cause of their evacuation. Dr. Symson[s] however having frequently observ'd girls to grow considerably after the first eruption of the menses, & also that venesection or any other evacuation does not retard or lessen the discharge which, he says, must necessarily happen if it depended upon the gradual accumulation of a plethora, denies an universal plethora to be the cause of the menstrual flux, supposing only a partial one of the uterus, & a perviousness of the uterine vessels readily admitting the red blood to pass through their exhaling extremities upon an accumulation of it in the same without a plethora of the whole system.

The celebrated Baron Haller[t] one of the greatest physiologists perhaps of the present day, from the experiments of Dr. Wintringham[u] not only found that the aorta descendens of a woman is much more capacious in proportion than that of a man, which has been frequently noticed by others before him, but that the ratio of the arteries as they approach to

(s) System of the womb.
(t) Elementa physiologiae Tom 7 part 2
(u) Experimental Inquiry.

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the arteries greatly increases in capacity & lessens in density while quite the contrary takes place with regard to the veins, (for the ratio of their capacity decreases as they approach to the uterus & their density increases), the consequence of which must be a more free afflux of blood to the uterus than return of the same from thence; & that in proportion as the system is more or less full of circulating fluids; hence an accumulation of blood will happen in the vessels of the uterus even when no plethora prevails thro' the whole body. For, if ever so small a portion of blood is conveyed to the uterus by each pulsation of the arteries more than is returned from the same by the veins, which, if Wintringham's experiments be true, must inevitably happen, according to the laws of hydraulics, a sufficient quantity in time will be coacervated to dilate the exhaling arteries (that, in the intermediate times betwixt the menstrual periods, only admit a thin fluid, & thence find exit, until the distended vessels have exonerated themselves of the accumulated blood, when, by their natural elasticity they will contract themselves by degrees to their former capacity. In this state they will remain till a new accumulation from the same cause again dilates them, when the same discharge as before will follow, & so continue to return at certain periods, if nothing happens to prevent it, 'till old age begins to come on, when, as the arteries are well known to increase in density faster in proportion than the veins, an equilibrium in the density of the arteries & veins

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of the uterus will happen, or perhaps the uterine arteries will then have become more dense than the veins, & consequently no accumulation will then happen as the blood will then return as freely & copiously from, as it flows to the uterus, and menstruation will spontaneously cease.

Many others have embraced the opinion of a partial plethora, particularly Dr Astruc, but this celebrated parisian professor endeavors to account for the accumulation of blood in the uterus in a very different manner from the above; he asserts that besides the arteries & veins commonly taken notice of in the uterus, there are two other sets of vessels, the one a kind of appendage to the veins that pierce through the internal coat of the uterus having their extremities commonly shut either by their natural elasticity, or by a supposed valve opening towards the cavity of the uterus & thence called by him caecal appendices; the other set of vessels he calls vermicular or lactiferous, & are disposed in a contorted manner in fasciculi through the uterus, opening like the former into its cavity. Now, in order to account for the menstrual flux he says, that girls after having arrived to the age of puberty & a greater quantity of good chyle being formed than is necessary for the nourishment of the body, which has now nearly done growing, the vermicular vessels that till this period contain only a thin lymph that was readily taken up by the lymphatics become now gradually distended with a milky fluid too thick

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to be taken up by the same lymphatics, & by their distention press upon the adjacent vessels so as to hinder the free return of the blood thro' them, whence it will be forced into the lateral venous appendices till they become distended so far as to open their extremities & allow a discharge of the accumulated blood into the cavity of the uterus after which they will contract to as small a size as before: but as action & reaction are equal, as the vermicular vessels press upon the capillary veins and cause a discharge of red blood from the venous appendices, so the vermicular vessels are pressed upon by the same veins with the same force they are compressed by them & cause the milky fluid to discharge from them at the same time.(w)

But notwithstanding this hypothesis is very ingenious, as this particular fabric of the uterine vessels rests wholly on the authority of this author, I beg leave to suspend my assent till the matter is better ascertained by a sufficient number of vouchers.

De Gorter(x) imagins the menstrual flux is owing to a particular motion excited in the uterine vessels at certain periods & not to a plethora of the system, while Dr. Emett(y) from observing that beasts sub tempora cupidinis venereæ have a discharge from the pudenda, similar to the menses in women, which does not appear at any other time, supposes that a venereal stimulus is the cause of the menstrual flux; but I shall pass over the further consideration of these & proceed immediately to speak of the retention of the Catamenia

(w) Astruc on the diseases of women vol: 1 p: 5, 7, 26.
(x) Medicina Hippocratica tom: 2d. p. 636.
(y) New Theory of the menstrual flux.

Of the retention of the Catamenia.

The term *retention* when apply'd to the *catamenia* seems to be generic, including under it three species viz: a *retardation*, *obstruction* and *suppression* of the catamenia.

A *retardation* of the menses is when they do not appear at a proper age, as for example at about 14 or 15 with us. When the periods return at longer intervals than usual, or continue for a shorter time, then they are said to be *obstructed*; but when they are entirely wanting they are said to be *suppressed*.(2) The two latter terms however are frequently used as synonimous, but since they are all similar as to their causes & method of treatment, these distinctions are less necessary to be kept up.

The proximate causes of a retention of the menses are,

1st A spasmodic constriction of the uterine vessels.
2dly A laxity & debility of the system.
3dly A viscidity of the fluids.
4thly A plethora.

1st *A spasmodic constriction of the uterine vessels*. We readily understand how this causes a retention of the menses by considering, that from this cause the exhaling arteries of the uterus are rendered too rigid to give way to the impulse of the blood whether partially or universally accumulated. This constriction may arise from various causes, as the sudden exposure of the body to cold which acting as a stimulus upon the *solida viva* causes the muscular fibres to contract so as to produce spasms particularly of the

(2) *Home's* principia med: p 287, *Shaw's* practice of physic vol. 2. p. 1.

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small capillary vessels which are very irritable; a cold moist air, wetting the feet in cold water, sudden and violent passions of the mind as anger, grief, fear, which have such powerful effects in constricting the small vessels as frequently to cause a violent sensation of coldness & sometimes a rigidity of the whole system; no wonder then in the present case that the catamenia disappeard upon the sudden fright which the woman received, as the exhaling vessels of the uterus were by that means suddenly contracted by a spasm so as not to admit any more red blood, the coldness & dampness of the night air might possibly also concur to produce the effect, especially if she was a person that had been little exposed to the night air & was of a delicate constitution.

2dly A laxity & debility of the system. In this case the vis motrix is too weak & languid to keep up a proper circulation of the fluids, & force on the blood with a sufficient impetus through the small capillary vessels, particularly the small minute arteries of the uterus, hence a retention of the menses will happen for want of sufficient strength in the heart & arteries to propel the blood with a momentum that will dilate the extremities of the uterine arteries & allow an exit to the menstrual blood. Whatever diminishes the cohesion of the solids will bring on this laxity & debility of the system, as too much warmth, the frequent use of the warm bath, drinking of warm watery liquors, as Tea & Coffee, a practice that has become too fashionable at present, to which add a naturally weak & delicate stamina.

3dly A viscidity of the fluids. This is a common con=
=sequence of the former, for such is the nature of our fluids that if they circulate more languidly than is natural through the body, or are hurried on with too great a degree of velocity, in either case they will contract a viscidity or lentor, in the former by a defect, in the latter by an excess in their motion; but this lentor will be very different in the two cases & have very different effects on the system, the former as it depends on a viscidity of the serum and weakness of the aimapoetic organs is called a pituitous lentor or viscidity, the latter as being most commonly present in inflamatory disorders is called phlogistic lentor. Now as a pituitous lentor of the fluids is the consequence of a debility of the solids, when both these are present as most commonly happens, a retention of the menses will undoubtedly follow, for the vessels in that case will not only be too weak to force on the blood with a sufficient impetus, but the fluids by their viscidity will be impervious to the small capillaries of the uterus. Whatever then weakens the system causes a viscidity of the fluids, particularly warmth & moisture, as also eating crude & unfermented farinacea, drinking vapid ales, a sedentary life, frequent debauches &c:

4^{thly} Plethora. As a plethora is so commonly imagin'd to be the cause of the menstrual discharge it may seem strange to suppose that it can ever be the means of a suppression of the same, but experience teaches us that it is sometimes actually

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the case; for whenever the bulk of the fluids becomes so great that the vessels are not capable of contracting upon them with a sufficient force to propel them on through their small capil-lary extremities, a retention of the menses will be the con-sequence in the same manner as happens in a debility of the system for want of a power sufficient to dilate the extremities of the exhaling arteries of the uterus so as to admit the proper discharge of blood through them.

Having thus briefly treated of the causes of menstrual retention, let us proceed first to explain the

Ratio Symptomatum

Notwithstanding from what has been said in the preceeding part of this essay, it seems very probable that the menstrual discharge is not owing to a plethora of the system, it is easily understood how the suppression of so natural & customary an evacuation, will bring on a plethora, & be productive of many very troublesome symptoms. I shall here only take notice of those which happened in the present case.

Pain in the back and stomach. This proceeds from the blood that was passing off from the uterus being suddenly stopt in its course that way & forced to regurgitate through the vessels distributed to these parts, whence they become stretched & overdistended, causing a distraction of the nervous fibrils & of consequence a troublesome sense of pain.

Impaired appetite. This must have proceeded from an injury of the functions of the stomach by the irregular flow of blood through its vessels, or from the consent of the stomach with the uterus.

Thirst. The thirst might be owing to more or less of a fever which always follows from any irregularity in the functions of the body.

Cough. Upon the blood that used to be discharged from the uterus being retained & thrown upon the lungs an infarction of them will happen & an irritation of the nerves from a distraction of their fibres by the surcharge of blood, hence a cough will follow, more or less violent in proportion as the irritation is increased by these causes.

Prognosis

As the woman was of a healthy habit before this accident happened, and as she was not siezed with any violent symptoms after her menses were suppress'd; the prognosis must of consequence be pretty favorable, unless as her lungs seem considerably affected a phthisis pulmonalis should be feared.

Methodus Medendi

In treating of the cure of a suppression of the menses I shall confine myself entirely to the case in hand in order to avoid too great a prolixity.

The curative indications in this case may be reduced to three.

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1st To relax the constriction of the uterine vessels.
2dly To increase the flow of blood into the same.
3dly To strengthen & invigorate the system.

The first intention may be answered, by,

(a) **Venesection**. which by taking off the tension of the vessels often proves one of the most powerful remedies in relaxing spasms. In this case it will perhaps prove particularly serviceable as the sudden suppression of the usual discharge of blood must have produced a Plethora which being removed by this means the vessels will be able to act more powerfully on the circulating fluids so as to urge them on with a greater velocity & thereby assist in overcoming the spasm.

(b) **Semicupia**. These by the warmth & moisture which they introduce into the system, powerfully lessen the cohesion of the solid parts & thereby diminish their strength & rigidity & cause a relaxation of spasmodic constrictions so as to allow a free circulation of the fluids through every part, hence that serenity & pleasing sensation that diffuses itself through the whole system, more particularly the inferior parts that are immersed in the bath.

(c) **Antispasmodics**. Among this class of medicines Myrrh, Asafoetida, Castor, Musk, Crocus, Pulegium, & all those of the like called emmenagogues from their great

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efficacy in removing spasms, & promoting the menstrual discharge by a seemingly specific stimulus of the uterus will prove serviceable in the present case.

(δ) Opiates. These principally by their action on the stomach as appears from the experiments of Whytt[a] & Haller[b] greatly diminish the sensibility of the whole system & thence frequently prove the most effectual in removing spasmodic constrictions of the uterine vessels; therefore, as in the present case the suppression appears to be owing to this cause, after proper evacuations by bleeding, if no inflammatory symptoms appear, opiates cautiously administred will perhaps have the most salutary effect.

To answer the second intention the following will probably prove effectual.

(a) Friction of the inferior extremities, which by quickening the circulation of the blood thro' those parts will cause it to flow more copiously thro' the descending aorta & hence a proportionably greater quantity of blood to the uterus by that means.

(b) Pediluvia. These relax the vessels of the feet & legs so as to allow a more copious flow of blood into them & thence increase its circulation to the uterus & inferior parts as well as by removing spasms in the same manner as

(a) Essays physical & literary & essay on vital motions.
(b) Elementa physiologiae Tom: 1.

semicupia which therefore may be also made use of to answer this intention.

(γ) Emmenagogues. Such as those mentioned under the head of antispasmodics which we there said acted by their stimulating the uterus & thus increasing the flow of blood to the same as well as by taking off the spasm of the vessels. To them may be added mercury which is found by frequent experience to be very powerful in removing a suppression of the menses, particularly if the suppression is owing to a lentor or viscidity of the fluids.

(δ) Cathartics. Among these aloes & black helebore are the best. The former by its powerful stimulus particularly of the rectum which lies in contact with the uterus excites a more copious flow of blood to those parts as well as takes off the spasm of the vessels by the same means. The celebrated Dr. Mead[c] particularly recommends the black helebore in suppressed menses & says he rarely knew it fail of success.

(ε) Compression of the crural arteries. As the uterus recieves vessels from the external Iliacs which pass up to

(c) Monita & precepta medica

it along the groin[d] it is evident that any compression of the crural vessels which are a continuation of the same iliacs so as to prevent the free passage of the blood through them will force a greater quantity of blood to the uterus by which means the vessels of the same will be dilated so as to allow an exit to the blood particularly if the steam of warm water be applyed immediately to the part according to the directions of Dr. Hamilton[e] for thereby the vessels will be relaxed so as readily to give way to the more copious flow of blood into them. I have frequently seen this method put in practice in the pennsylvania Hospital by the directions of the judicious Dr. Bond & very rarely saw it fail of success.

The last intention, which is, to strengthen and invigorate the system so as to excite a due momentum in the circulating fluids & thereby bring on a discharge of the menses by sufficiently dilating the small extremities of the exhaling arteries of the uterus is best answered by,

(a) **Steel**. The strengthning quality of this metal

(d) Boerhaavii Institut: med: c notis Halleri vol: 5.
(e) Essays physical & literary vol: 2.

is well known to all physicians, but as it acts only in a state of solution it ought never to be given in its metallic form unless we are assured there is an acid in the _primæ viæ_ that will reduce it to a saline state & render it misceable with the other juices of the stomach, for that reason such preparations of it as are readily soluble are most frequently prescribed but of all others the chalybeate waters are found to be the most effectual in promoting the menstrual discharge.

(b) Bark. This is an excellent corroborant and stomachic & deserves the next place to steel, though it is less powerful in promoting the menses.

(c) Bitters. These by promoting digestion & strengthning the whole system as well as the stomach may also assist in promoting the menstrual discharge.

(d) Cold Bath. Cold by condensing the solids causes a greater aproximation of their constituent fibres & thereby increases their cohesion, tone, and elasticity. Besides, being suddenly applyed as in cold bathing it acts as a stimulus on the solida viva & excites them to contraction, so that by this

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(ε) Exercise. This ought to be joined with the foregoing remedies, for without it medicines cannot be expected to have any very good effect. Besides exercise by the frequent action of the muscles urges on the blood with an increased impetus, & by the erect posture of the body directs its course particularly to the uterine region, hence by both these causes it greatly assists in bringing about the wished for event.

To conclude, it will not be amiss just to mention that the remedies above recommended for removing a suppression of the menses are most properly made use of about the time of their expected return, because then nature will assist in producing the effect & without her assistance all the efforts of art will prove ineffectual.

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viris cohabitare.

Hippocrates de morbis virg:

A Physiological Essay

on the

Female Catamenia

translated from

Baron de Haller's

Elementa Physiologia

By

Jonathan Elmer M.D.

Of the Menstrual Purgation

The menstrual purgation is that discharge of blood from the pudendum, which happens, by a law of nature, to all females of the human species, (a very few instances excepted) every solar month, from the time of puberty to the beginning of old age.

I call it a law of the human species notwith-:standing some travellers relate that women who live under the arctic circle have not the menses. Others also assert that the Brasilian Ladies are exempt from this discharge; but there is reason to doubt the truth of these relations, as the women who live very near them are known to have the menses. The Samojad, Lapland & Scythian women men-:struate though sparingly & at long periods.

I have likewise said that the menses are peculiar to the human species. Aristotle indeed has wrote that all female quadrupeds having warm blood menstruate periodically like women. The same is asserted by many authors both ancient & modern of Apes, Cows, Does, Mares, Bitches and other animals. But we ought not to call the small

discharge of blood from the genitals of Beasts sub tempora cupidinis venereæ a menstrual purgation.

On the contrary there are many examples of women who during their whole life or for many years did not menstruate; & of some who though they had not the menses yet bore children. But these are all preternatural instances, arising from some peculiarity in the fabric of the Uterus, and therefore do not destroy the general rule.

At the time that the Breasts begin to swell, & hairs appear on the Pubes, the menses also make their appearance. Sometimes however they break forth prematurely. There are instances of the menses having appeared in one month after birth, at the age of 2, 3, 4, 5, 6, 7, 8 years &c: to the usual period. Haller knew a handsome delicate young Girl, of 9 years of age, who had menstruated regularly for several years, without any detriment to her. And we read of many instances of women bearing children at 9, 10 & 12 years of age. Haller mentions one who had a child by her uncle at 9 years of age.

M[illegible] with his wife Ayesha at 8 years old. In India & Arabia they bear children at 9.

This premature appearance of the menses, is rare in our Country. In the warm regions of Asia it is so natural that women frequently marry at 9 or 10 years of age. Pliny says at 4, others say at 5. In Persia they expect the menses at nine.[x]

For the most part in Europe the menses do not appear until the Virgin has nearly got her growth, which is at about 12 or 14 years of age. Sooner in the southern, but later in the northern regions. In the most northern parts not till the 24 year.

Old women are generally exempt from the menses. About the 36 year they begin to discharge a whitish matter & grow barren, & at 40 sooner or later the periods grow irregular, large hemorrhages with long uncertain periods intervening, until about the 50 year, when they entirely cease, together with fecundity. But as women arrive at maturity earlier in warm climates, they likewise become barren & cease menstruating proportionably earlier. In cold climates, on the contrary, the menses are slower both in their eruption & cessation. This however is not an invariable rule. There are examples of women menstruating at 50, 60, 70 & even 100 years old.

Mahomet cohabited with his wife Ayesha at 8 years old. In India & Arabia they bear children at 9.

In some of these cases the menses flowed regularly, in others they returned after a long suppression. It is to be feared however that most of these cases were morbid, & arose from a disordered state of the Uterus, as they sometimes proved fatal.

With the late returns of the menses, fecundity has also returned. There are examples of women bear:ing children at 50, 60 & 70 years of age, particularly in cold climates where this faculty generally continues longer than in warm ones.

Gravid women are also generally exempt from the menses. Almost the only sign by which women certainly know that they have conceived, is, the cessation of the menses, without any obvious cause. But this does not always take place, altho' it be very frequent. There are examples of women having had their menses in the first months of gestation, & even during the whole term of pregnancy, without any injury either to the mother or foetus. Some women are also said never to menstruate but in the time of pregnancy. Daventer relates an instance of this

Women do not commonly menstruate during lactation

lactation, though more frequently than during gestation. There are examples of the menses flowing in less than one month after parturition. Lactation however retards conception.

Phenomena of the Menses

In common a whitish humour is discharged several months before blood, at which time some or all of the following symptoms appear, viz: pains, a distention in the back & pelvis, numbness of the back & thighs, heat, inflammation, pain in the head, cutaneous eruptions particularly of the face, accompanied sometimes with colic pains, & a quick strong & dicrotic pulse; upon which first serum, and then blood, is discharged, sometimes in drops; after which the symptoms all abate, or entirely disappear.

The Duration of the period is uncertain; in some it continues but 2, 3 or 4 days, in others 7 or 8.

The quantity of Blood evacuated is likewise uncertain. For the most part it is largest in warm climates. Sometimes one pound or more, sometimes to fainting & even sudden death. In cold climates they rarely exceed five or six ounces, sometimes not more than two or three.

The mode of living also makes a difference. Those women who live high & are lascivious, menstruate more copiously than those who live low and use much exercise.

As the menses flow the symptoms abate, & the congested blood being discharged, the vessels contract so as only to admit serum. A diminution of the pulse, symptoms of debility, hollow eyes & livid circles under them ensue.

In young Virgins, some months often intervene after the first period, before another returns; after which they gradually contract to regular solar monthly returns. The menstrual flow continuing 7 or 8 days the intermission 22 or 23. This is what is observed in sober temperate women. A difference in regimen causes a variation. Lux=urious women, who live high, sometimes menstruate twice or three times a month. Many other causes also vary the menstrual periods.

Thus ends the period. The like phenomena preceed the next eruption of the menses, which vanish upon their being discharged.

Of the nature of the menstrual Blood.

The opinion of the menstrual blood being foetid & poisonous, appears to have been brought to us from *Asia*, by the Arabian physicians. In very warm regions, if uncleanliness be combined with the warmth of the Air, it is probable, that the heat & the vicinity of the alvine faeces, may render the blood acrid & foetid; but that it is poisonous & will kill men, plants &c: is utterly erroneous.

Hippocrates & *Aristotle* say, that the menses are like the blood which flows from a slaughtered victim; and in a healthy woman it certainly differs in no respect from the blood in her body, except perhaps in being a little more viscid, on account of the mucus mixed with it.

Of the Source of the Menses

This remains undetermined. Some men observing the menses to flow, sometimes, in gravid women, are of opinion, that the blood proceeds from the *vagina*, because they say the foetus entirely fills the uterus, & the mouth of the same is quite closed in pregnancy. In support of this opinion they further add, that that the menses flow when the uterus is full of

water, that the blood discharged is of a fluid nature, & that the uterus & its vessels are small when compared with those of the vagina. Lastly they have recourse to experience; to the manifest hemorrhage of the vagina in a gravid woman as related by La Motte; to the uterus having been found free from blood, at the time of the menstrual period; to Vieussen's experiment of Quicksilver exuding through the vessels of the vagina, & not through those of the uterus; to the example recorded by Hasenoehrl of a woman having the menses, the mouth of whose uterus was grown up; to the menses continuing to flow after an inversion & amputation of the Uterus.

From these examples it appears that the menses are sometimes discharged from the Vagina, when the uterus is obstructed. But this is no more to be wondered at, than that blood should be discharged by the Hemorrhoids, & many other ways, either in conjunction with the menses, or when they are suppressed.

But many things demonstrate, that the menses are principally discharged from the uterus, as; the number & largeness of the uterine vessels wch

exceed those of the vagina; the manifest flow of the Lochia from the uterus, which is similar to the menses; the villous & porous internal surface of the uterus, distilling an injected fluid; the pores of the uterus from which blood may be pressed; the menses effused under the internal coat of the uterus; the spots observable in the uterus which distill blood; the uterus in a suppres:sion of the menses being stuffed with black blood, & its vessels during the flux being full of blood; lastly, the manifest flowing of the menses from the uterus, & not from the vagina, in numerous instances.

Nor do I believe that any part of the menstrual blood is discharged from the vagina, except in a disordered state of the uterus. Even in pregnant women, the menses, in most cases, flow from a part of the uterus to which the foetus is not connected.

The menstrual blood, I believe, is discharged from every part of the uterus, but most from its fundus & body.

Whether the menses flow from arteries or veins appears to me very difficult to determine. The adjacent Hemorrhoids certainly flowing from veins, the lochia being likewise discharged from veins, the distention of the vessels during menstruation, the black stagnant blood in the veins in a suppression of the menses, the mouths of the veins being more patulent than those of the arteries, all favour the opinion of the menstrual blood flowing from veins.

Morgagni & Simson suppose the blood is discharged from the sinuses of the uterus. — Astruc from a dilatation of its venous appendices. Arragon from cells interposed between the arteries & veins. Boerhaave from error loci or the passing of blood thro' vessels at other times conveying a thiner fluid; the vessels gradually dilating so as at first to admit serum & then red blood. Kaau says the exhaling capillary arteries are easily seen in the uterus. There are others also, who have both seen & introduced bristles

into the mouths of the capillary arteries of the uterus, which discharge the menses. Therefore, most of the moderns derive the menses from arteries, but it does not easily admit of demonstration. However, from the greater tumefaction of the hemorrhoidal than of the uterine veins during the menstrual period, from the menses having many things in common w:th the intestinal exhalation & the exudation of injections, from its being more easy to conceive of a congestion of blood in the arteries than veins, we are led to conclude, that the menses are discharged from arteries, the lochia from veins.

To determine why women are more obnoxious to discharges of blood than men, & why those sanguineous excretions happen at stated periods, are very difficult questions.

Three hypotheses have been adopted for explaining this phenomenon. The influence of the moon, an Uterine ferment, & a Plethora.

As the *menstrual* periods correspond nearly with the *lunar* periods, it is not to be wondered that the ancients, & even some moderns, have had recourse to this *Goddess* for solving the difficulty. To which add the efficacy of the moon on Epileptics, & the increase of pains about the full of the moon.

But we have now learned from experience, that those things which at first appear likeliest to explain a phenomenon, are almost always, on enquiry, found fallacious. If the moon has any influence, it must operate either when it is nearest, or farthest off, from the Earth, for it can't be supposed to have the same influence or attractive power in different situations. If the moon excites the menses when nearest the earth, or in her perigaeum, she cannot do it when farthest off, or in her apogaeum. Now it is well known that in populous cities, there is not a day in the month on which many women do not begin to menstruate, without any reference to the particular phase or position of the moon.

The influence therefore of the moon cannot be the cause of the menses, since contrary effects cannot proceed from the same cause. Besides, as the menstrual periods follow more the course of the Sun than moon, the same woman will menstruate sometimes at the new, & sometimes at the full moon. Lastly, experience proves that the moon has no influence on the Quicksilver of a Barometer, & consequently no attractive power over fluids at rest, in open vessels; much less over the blood in the small capillary vessels of the uterus, constantly in motion.

Ferment

This theory took its rise in the last age. Delpaaf, Charlton, & Bayle, were its great supporters. They deduced most of the motions in the human body from a chemical ferment. Nor are there wanting advocates for this doctrine in the present age as Glandolph, Sanctor;

Vieussens & Verheyen suppose this ferment is in the uterus; Charlton & Bayle in the sinuses of the uterus; others in the female prostatæ, & others in the Bile or excrementitious liquor of the Kidneys or Ovaria

To support this doctrine they alledge, that women are more salacious during the flow of the menses than at other times; that the earlier and more plentifully they menstruate the more salacious they are; that the venereal oestrum commences about the 14 year of a girl's age, at the same time that the menses begin to flow; & that when the menses cease this oestrum ceases also.

But women deny that they are more inclined to venery at that time than any other time, altho' the congestion of blood creates some uneasiness & a titillating sensation in them, as is observable in the females of other animals

There are many sober chaste virgins who are troubled with grievous pains when they menstruate, which appears to arise, not from acrimony or inflam=
=mation, but from a great distention of the vessels. In others the periods are accompanied rather with a languor & sadness.

Girls also who menstruate before puberty have not an inclination for venery, & sometimes they have it not during life. But what is a more powerful argument than any, the phenomena of

the menses by no means points out any such thing in the female system. If there was anything like a ferment in the uterus, the effects of a suppression of the menses would be more manifest in that viscus, as the accumulated ferment would either corrode or destroy it; whereas on the contrary we daily see, that when the menses are suppressed the whole system is affected, by the plethora & distention of the vessels, from a retention of the menstrual blood.

That we may explain the true cause of the menses, we ought to attend 1, To the phenomena which accompany their flowing. 2 To the causes which excite them. 3 To the impediments which retard or entirely suppress them. 4 To the evils which ensue from their suppression, & 5 To the advantages that arise from their being restored.

1 To the pains & other external symptoms or phenomena already mentioned, which precede and accompany the flux of the menses, we may here add some internal ones, as a distention of the spermatic & uterine vessels, an enlargement & tumefaction of the uterus, & other symptoms of a topical plethora.

Also an increased circulation of the blood, a quick strong & sometimes a dicrotic pulse

2 The causes which accelerate or excite the menses are principally three. An increased circulation of the blood. A greater quantity of blood in the system. A greater afflux of blood to the uterus.

To the first cause pertains, the warmth of the climate, which causes the menses to appear earlier & flow in greater quantity; a fever, which accelerates the menses & in pregnant women causes abortion; acuteness of understanding; affections of the mind as Joy, anger, terror; venery; sternutation; the use of acrid plants, particularly pulegium.

To the second class pertains, a plethora, high living & Idleness which generally occasion a more copious & frequent flow of the menses, such women perspiring less & thereby becoming plethoric; the use of Chalybeates, which increase the quantity of red blood, & thereby bring on a plethora & a return of the menses. To these causes likewise may be referred, the sudden growth of the body, accompanied with an early appearance of the menses, & enlargement of the Mammæ.

To the third class must be referred, all those things that restore the menses, by diverting the course of the blood through the inferior Aorta, as Pediluvia, bleeding in the feet, warm vapours recieved into the uterus, Leaches applied to the uterine region, pessaries much used by the ancients, Cathartics, ligatures on the crural arteries while warm vapors are applied to the parts &c.

3 It is easily perceived that the menses are retarded or suppressed by every thing contrary to those just mentioned; as, a cold climate, hence on the Alps the menses are very frequently suppressed; acid & refrigerating diet; long & ungrateful affections of the mind, as sadness, fear, hopeless love; a diminution of the plethora, from whatever cause, as a spare diet, long sickness, frequent venesections & scarifications, by this last method the women of Brasil are said to free themselves from the menstrual discharge; also, by frequent purging, & all other things that increase the loss of the fluids, as increased salivation & perspiration from hard labour, Diarrhoea, ulcers discharging

pus

pus largely; to which also may be refered, a sudden increase of growth, a diversion of the blood from the uterus by cold feet & cold bathing.

4 The symptoms that arise from a suppression of the menses are many & very various. Some relate to the uterus in which the blood is retained, others to a depravation of the blood arising from the suppression, others from an affection of the nervous system, & others from the plethora consequent upon the suppression.

To the first class may be refered inflammations and suppurations of the uterus.

To a depravation of the blood stagnant in the uterus & become acrid & resorbed into the veins may be referred, loss of appetite, chlorosis, oedematous swel:lings, & other evils arising from a want of concoction.

From the same acrid blood being conveyed to the head & irritating the nerves proceed, hysterics, convulsions, Epilepsies &c.

From a plethora causing congestions proceeds cephalalgies, odontalgies, blindness, oppletion of the Lungs, hemoptoe, phthisis & colic pains, all which grave'd women are more or less subject to, upon the first cessation of the menses in them.

Hæmorrhages from various parts of the body sometimes succeed a suppression of the menses, as from the sutures of the cranium, the angle of the eye, the Ear, the nose, the gums, the Teeth, the salivary Ducts, the palate, the Lungs very frequently, the mamma, the stomach, the hemorrhoids, the Kidneys, the umbilicus, the pores of the skin, the wrist, the finger; from tumors, issues, ulcers & ruptured veins.

5 As to the morbid symptoms that are removed by restoring the menses, Hippocrates depended much on puberty for the cure of the Epilepsy, Blindness, spitting of Blood & other evils arising from blood congested in the head & breast; likewise loss of appetite, pains in the head, hysterics, convulsions, and all other symptoms arising from a suppression of the menses are removed upon restoring them.

Theory of the Menstrual Flux.

Until very lately no one has assigned a satisfactory reason why women are more subject to a general plethora than men, or why that plethora in the ordinary course of nature is diverted to the uterus. The industry of Dr. Clifton Wintringham

who first unfolded this secret of nature justly merits praise. From his experiments it plainly appears that no accumulation of blood would happen in females more than in males, if the veins in females were of the same comparative strength as those of males. In both the arteries are superior to the veins in strength, but much more so in males than in females. He found the arteries of an Ewe every where more lax and capacious than the corresponding arteries of a Ram.

The density of the Aorta near the heart in a Ram to its Strength in the same place, he found, to be as 79 to 78; the ratio of the same above the origin of the emulgent vessels as 1238 to 1000; above the Iliacs as 1272 to 1000. The strength also of the iliac Artery in a ram to the strength of the same artery in a Ewe is as 1205 to 1000. The ratio of the solid part of the inferior Aorta of a Ram to the capacity & blood therein contained is to the ratio of the same Aorta in an Ewe as 1108 to 1000; in the superior or ascendant Aorta as 1033 to 1000 above the emulgents as 1319 to 1229.

The laxity of the Arteries, therefore, leading to the uterus is greater in females than males; Consequently they are more easily distended by the blood sent into them by the Heart. On the contrary, the veins in females are not weaker than the Arteries in the same proportion as in males. The strength of the Aorta of a Ram at the Iliacs exceeds that of the corresponding artery in an Ewe in the ration of 71 to 70. The strength of the Vena Cava of a Ram exceeds the strength of the same vena cava in an Ewe only in the ration of 155 to 154. Again the strength of the Arteries above the emulgents, in a Ram, is, to the strength of the veins in the same place as 1238 to 1000, in an Ewe as 1166 to 1000, that is in a much smaller ratio.

Near the iliac Arteries, the strength of the Arteries is to the strength of the veins in a Ram, as 1295 to 1000, in an Ewe as 155 to 154, that is in a still less ratio or proportion. As therefore the veins are less easily dilated in females than in males, consequently the capacity of the veins in females will be proportionably less than in males.

The capacity of the vena cava superior in a ram is to the capacity of its corresponding artery as 1685 to 1000, in an Ewe as 1713 to 1000. The capacity therefore of the Arteries exceeds that of the Veins less in proportion in an ewe than in a ram the farther they are from the heart towards the pelvis, consequently they resist more the impulse of the blood. The same may be said in other examples.

It is not to be wondered at, that the inferior Aorta & hypogastric arteries are larger in females than males since the pelvis in females is larger than in males, the viscera therein contained greater & the uterus & vagina requires a greater quantity of blood to be conveyed to them, than the vesiculæ seminales & prostata in men

But Dr. Wintringham has shown by his experiments that the Aorta grows broader in females than in males as it approaches the iliacs but diminishes in strength, consequently the arteries in the pelvis of females are more dilated than those of males. Thus, in an Ewe the density of the Aorta decreased as it approached the Iliacs in the proportion of 1000 to 1089, in a Ram

only in the ratio of 100 to 106, which proves that the arteries of an Ewe running to the pelvis are proportionably weaker than those of a Ram & more easily admit the blood from the heart to pass through them.

Further, the capacity of the inferior Aorta to that of the superior Aorta in an Ewe is to the same arteries in a Ram as 1082 to 1000, that is the inferior Aorta of an Ewe is more capacious than that of a Ram. Nearer the uterus the ratio is as 1105 to 1000.

The capacity therefore of the Aorta increases as it approaches the pelvis more in females than males, for being less dense the blood dilates it more.

But, what is particularly to be attended to, the contrary takes place with regard to the veins. For the density of the Veins as they descend decreases more in a Ram than Ewe; for the density of the vena cava at the heart in a Ram is to the density of the same in an Ewe as 91 to 90, at the Iliacs as 155 to 154, that is in a less ratio. In like manner the capacity of the vena cava at the Kidneys in an Ewe is to the capacity of its corresponding Artery as 4694 to 1000, near the Iliacs as 191 to 100, of the Iliac veins as 164 to 100, that is, the veins are dilated more than doubly less than the arteries as they approach the pelvis.

From the foregoing experiments it followes that the inferior Aorta in females conveys the blood to the pelvis in greater quantity than can be returned by the proportionably small & dense veins of the Uterus, consequently it will accumulate in the small incipient extremities of the uterine veins; or in other words, the femal uterus is so formed that a particular plethora is easily & naturally generated in it.

These things being premised we shall next show why the menses first break forth in virgins.

Plethora of the vessels of the lower parts.

In all animals the vessels of the head are first unfolded, then of the Thorax, afterwards of the abdomen, & last of the lower parts.

The vessels of the inferior extremities being much the smallest at birth, they afterwards increase proportionably faster than those of the superior extremities. For as in a foetal state the blood is conveyed by the large umbilical arteries to the placenta & thereby diverted from the pelvis & lower extremities, so immediately after birth a ligature being applied to those arteries the blood descends by the Laws of derivation more freely to the inferior parts.

This increased flow of blood downwards expands the vessels of the pelvis & inferior extremities so much

the more the smaller & more lax they are & the more they retain of their embryo state. The vessels in the pelvis of females in particular are also still further enlarged by the more speedy flow of blood thro' the arteries and slower return of the same by the veins as above demonstrated. This evolution of the vessels of the uterus is confirmed by anatomical experiments. For the vessels of the uterus which in infants are so small as not to admit wax appear large & numerous at the age of puberty

About the 12 or 14 year of age the human species have generally nearly done growing; therefore a plethora then arises in both sexes. This is obvious in boys from the frequent hemorrhages of the Nose, florid countenance, eruptions on the pubes, generation of semen, enlargement of the seminal vessels, pollutions, proneness to venery, & tumefaction of the inguinal glands.

In Virgins a plethora of the whole system arises from the same causes; besides wh. a plethora peculiar to the female sex is generated, from their using less exercise, from their being less subject to hemorrhages, from their arteries being more lax & more easily distended by the blood while the veins, particularly of the uterus, are more dense & with more difficulty admit a return of the blood thro' them, by which means there happens an

accumulation of blood in the evanescent extremities of those arteries as is evident from the great enlargement of the vessels of the uterus & vagina, the growth of the clitoris & hairs on the pubes, & inclination for venery.

Females arrive at puberty sooner than men, as well from their being more plethoric than men, as from the greater laxity of their arteries leading to the uterus.

This is that plethora from which many authors both ancient & modern have deduced the theory of the Menses.

Local plethora of the Uterus

In young Virgins while the uterus continues encreasing the blood driven to it by the arteries unfolds their serpentine clusters & straitens them out, as appears in pregnancy. When the uterus has nearly done growing the force of the blood encreases the folds of those serpentine vessels as appears from injections which have that effect. From this contortion of the vessels the course of the blood is retarded. The return of the blood through the veins is also hindered by their density & smallness. From these two causes the blood stagnates in the small uterine vessels, there being more carried there, by each pulsation of the arteries, than can return, which, tho' small, encreases every pulsation. This redundant

blood, accumulating gradually in the small extremities of the arteries & incipient veins, distends the uterus, dilates the vessels, & makes way for its discharge by lateral pressure.

The adjacent spermatic & hypogastric veins are likewise distended by the slow return of the blood thro' them. Hence arise pains from a stretching of the nerves.

The extremities of the exhaling arteries of the uterus, gradually dilating by the coacervation of blood pressing à tergo, at first exhale a fine fluid, then serum, & afterwards blood. For the same thing happens here, as in an artery closed by a ligature, the blood passing from the compressed artery into an open branch. The ligature here is the resisting vein, the free branch is the exhaling artery, thro' which, as making less resistance, the accumulated blood passes. This exhalation through the arteries of the uterus, is very analogous to the exhalation into the Stomach, Intestines, Nose, & other parts.

Simson supposes the blood accumulates in sinuses of the uterus which distending gradually compress the adjacent arteries & retard the circula-

circulation of the blood until their extremities are opened & the congested blood discharged. But as the Celebrated Morgagni & other skilful Anatomists have never been able to discover these sinuses, we have great reason to doubt the existance of them. The same may be said with respect to what Astruc calls the venous apendices of the uterus, thro' which he supposes the menses are discharged.

Nor do I think with Dr Friend that the arteries are ruptured either here or in hemorrhages of the nose. For if that was the case, hard cicatrices would follow upon the closing of the vessels, which would entirely obstruct the future discharge of the menses.

From what has been said we may easily understand why Beasts, Men, pregnant & old Women, do not menstruate.

In Beasts, although the arteries running to the uterus are larger than the Veins, yet as the uterus is neither spongy nor dilatable & has no vessels opening into its cavity they do not menstruate

Besides, as the vessels & other solids of large animals are much firmer than in men they are much less subject to hemorrhages & a plethora than the human Species. Gravid Mares are thought to need bleeding.

Pitcairn & Freind add that the perpendicular position of women as an argument why they menstruate and why Beasts who have not that position do not.

That many men are subject to a plethora no one will deny. Hence we frequently see men suffer periodical discharges of blood from the Nose, hemorrhoids, Penis & other unusual ways. But they are much less subject to this than women on account of the greater firmness of their arteries & greater laxity of their veins which admits of a freer circulation of the blood through them; & from their using more exercise. Neither is there any viscus in the pelvis furnished with a sufficient number of vessels, nor is there that difference between the firmness of the arteries & veins of the pelvis as in women. The hemorrhages that happen to men are rarely menstrual.

Sanctorius is opinion that men are liable to a menstrual plethora, the same as women, accompanied with a languor, diminished perspiration & loss of appetite, & which goes off with increased perspiration & a plentiful discharge of turbid urine. This is rejected by Dr. D. Gorter & I believe rarely happens

Stahl & his followers say that the hemorrhoidal flux in men is equally natural & salutary as the menses in women, & equally necessary. De Haen has

refuted this doctrine, by proving, that men are less subject in general to hemorrhages than women, have a greater dissipation of their humors by exercise and course of living, & have no organ in which blood can be gradually coacervated until it forces itself a passage for its discharge.

Gravid Women very rarely have the menses, because the extremities of the uterine arteries are implanted in the placenta & the superfluous blood is consumed in nourishing the foetus.

Women who give suck are likewise commonly free from the Menses. The free secretion of milk consumes a great deal of their chyle & prevents their becoming plethoric.

At the age of 40 years women commonly cease menstruating, owing to the arteries of the uterus growing so firm as to resist the impulse of the blood. Hence women at this time of life are subject to many evils, as large hemorrhages from the uterus. The blood accumulated in the uterus overcoming the resistance of the rigid vessels, suddenly bursts forth in large quantities followed with long intervals, the blood not being able to find an outlet until a large quantity is collected.

Women who are not plethoric, who perspire much or otherways dissipate their humors are said not to menstruate.

The Blood that was accumulated in the uterus being discharged the vessels contract & the menses cease. The lost blood however is again gradually repaired. In about 30 days a plethora is regenerated, the redundant blood is accumulated in the uterus, the vessels distended, their extremities opened, & the menses again discharged

If it be asked why a plethora is generated & the menses discharged once a month rather than at any other period, I answer by asking why the human foetus is born at the end of nine months, why mares bring forth at twelve months, why some plants blossom in the month of April others in May & others in June, why Cherries are ripe in six weeks after blossoming & Aples in four months.

Objections

Many objections are made to the Theory of the menses proceeding from a plethora. And first with respect to women being of a more lax habit of body than men, it is said that there are many effeminate men who do not menstruate & many firm athletic women who notwithstanding menstruate regularly; neither does a less perspiration occasion the menses for a healthy girl is of the same weight after as before the flowing of the menses.

The remarkable growth of Girls after the first appearance of the menses is also urged as an objection to this doctrine. Many positively deny the existance of a pleathora in women. They say it's very improbable that for 60 ages past all women should labour under a plethora; besides, child-bed women, sick women, those who live low & use much exercise have the menses

If plethora was the cause of the menses venesection would supply its place which is not the case. Nor will bleeding remove the symptoms that arise from a suppression of the menses

The foetus cannot consume the whole of the plethora & yet gravid women rarely menstruate. Nor can the small quantity of redundant blood so dilate the lymphatic vessels as to admit blood to pass through them.

Females who have had a Limb amputated do not menstruate more frequently for it.

The symptoms arising from a suppression of the menses often vanish after some time without their evacuation. The like happens in gravid women. On the contrary the menses sometimes break forth unknown to the woman, without any previous symptoms

Repeated bleeding does not prevent the flowing of the menses

Answers

It is very rare that Viragoes & masculine women have a Beard or that the most effeminate men are destitute of one. The most robust women therefore

differ in their nature from men.

The weight of the menses which is commonly from six ounces to twelve is scarcely perceptible in a balance & the greatest exactness is necessary in the food taken, the discharges & cloathing in order to form any judgment on this head.

It is no more to be wondered that all women are plethoric than that they are all of a delicate soft habit of body & have breasts. The enlargement of the mammae & the Menses are the work of puberty w.c is common to all women. The menses appearing five or six years later in some women than others sufficiently indicates a diversity of Constitutions

It cannot be said without many exceptions that debilitated & sick women have the menses. But supposing it true it ought to be remembred that the menses proceed from the compound ratio of the impulse of the blood directly, & the resistance it meets with in the small arteries of the uterus inversely; therefore a smaller quantity of blood will force its way thro' a lax than through a firm uterus. Bleeding also frequently diminishes the quantity of the Menses. It is not yet proved by experiments that women who have a limb amputated are more plethoric, if they are the plethora is discharged either by the uterus or some other passage. In suppressions after ineffectual endeavours the plethora often goes off other ways

To me a plethora appears evidently the cause of the menses both from the blood bursting forth thro' other passages when they are suppressed & the forcible distention of the vessels & other concomitant symptoms.

The good effects of warm baths, vapors & ligatures applied upon the crural arteries clearly prove that the course of the blood being diverted to the pelvis & the uterine plethora thereby encreased, the cause of the menses is so encreased as to remove the suppression.

I find no appearance of truth in any other hypothesis.

Use of the Menses.

Nature has made women plethoric in order that during gestation that redundency of blood may serve for the nourishment of the foetus; for the same vessels that discharge the menses nourish the foetus. They also make the uterus more distensile & fits it for collecting the blood which unavoidably happens in pregnancy by the com:pression of the uterine veins. Hence the more plentifully women menstruate the more fertile they are. Hence abortion & parturition usually happen about the usual time of the menstrual periods an evidence that the blood w.^c by its impetus occasions the menses also causes abortion.

This is the true use of the Menses. It's secondary use is to evacuate the plethora when present. But nature would not have created women subject to a plethora, had it not been necessary for the support of the Foetus

Finis

Dissertatio Medica
Inauguralis
De sitis in febribus causis et remediis

Pro gradu doctoratûs
Summisque in medicinâ honoribus et privilegiis
rite ac legitime consequendis
Eruditorum examini subjicit
Jonathan Elmer

Aggrediar, non tam perficiendi spe, quam, experiendi voluntate
Cicero

Viro praecellentissimo,
Gulielmo Franklin Armigero,
Provinciae Neocaesareae Gubernatori;

nec non

Viris spectatissamis
Johanni Morgan
Gulielmo Shippen
Thomae Bond
Adamo Kuhn
ac
Benjamino Rush

In alma Philadelphiensi Academia
Professoribus medicinae celeberrimis
Arteque Apollinari
peritissimis:
Hasce suas in re medica primitias
Animi grati et reverentiae perpetuae
Monumentum ac pignus
Dedicat consecratque

J. Elmer

De sitis in febribus causis & remediis

1 Quoniam febres, secundum Hippocratem[(a)], omnium morborum sunt frequentissimi, qui generi humano incumbunt; et sitis, in omnibus febribus, plerumque se socium præbet: hujus molesti symptomatis causas indagare, & illius mitigandi remedia efficacissima indicare, fortasse, hujusce dissertationis argumentum ineptum non judicetur; præsertim, ut nemo adhuc, mihi cognitus, hanc rem ex professo tractavit.

2 In corpore sano causas sitis omnes perscrutari, nimis temporis impenderet. satis est dicere, ~~Quod~~ Propter fluidarum ~~aquosarum~~ partium ex renibus, cute, et aliis emunctoriis, perpetuam eliminationem dissipationemque, et etiam eorum innatam indolem acrem fieri, quando in corpore diu manserint; imbibere copiam sufficientem non solum ad conservandam aptam humorum fluiditatem, sed quoque, ad acres eluendas, omnino est necessarium. Quamobrem naturæ

(a) De flatibus cap. 3. vide etiam Boerhaave aph 558

nostræ sapientissimus Auctor, quandam sensationem omnibus cognitam, sitis nomine appellatam, nobis inseruit, quandocunque humorum status, ~~equidem~~ ad ~~notum~~ ~~producta~~ ~~efficiendo~~ ~~supplementum~~ aliquam humidam necessariam & æque alteram [illegible] suppeditationem postulat.

3 ~~###~~ quamdiu, etiamque, valetudine fruimur, et omnes corporis functiones equabiliter pergunt, supplementum necessarium est moderatum, et sitis sensatio, vel bibendi cupido, nec sæpe, nec fortiter urget; sed, quum functiones turbantur, & circulatio sanguinis ob ullam causam augetur, in tantum quod febrem efficiat, hoc symptoma, molestissimum fit, et remediis nullis ~~sæpe~~ ~~[illegible]~~ compescit. In hac re, igitur, methodice pergere, imprimis, necessarium erit, quænam sint causæ, & quinam, in corpore humano, febris effectus considerare; unde hujus præter~~-naturalis~~ sitis causarum accurat:am cognitionem forsan adipiscemur, nec non ex aliqua parte, sitem sedandi efficacissimas methodo ~~[illegible]~~ indicare poterimus.

4 Utrum sanguinis lentor febrium sit proxima causa, ut Boerhaavio[a] placet, an nervosi & vascularis systematis, spasmodica affectio, ex opinione Hoffman

vel cordis auctus stimulus, ab aliqua acrimonia, secundum segacissimi Doct[oris] Whyttii theoriam, non nostrum est componere. Attamen, me judice, harum nulla, in omnibus febrium generibus, omnino est vera. Etenim, quamvis, in febribus, ardentis & inflammatorii generis, Boerhaaviana doctrina verisimilior esse videtur, ob calorem magnum, pulsum plenum & validum, eque ac sanguinis densitatem manifestam è venis emissi; nihilominus, in intermittentibus, & febribus lentis nervosis, spasmus et acer humorum status causæ probabiliores esse videntur; et ardentissimi generis febres, ab acrimonia aliqua in sanguinem accepta, ut in variolis, morbillis, &c. sæpenumero oriuntur.

5 In omnium febrium initio, horripilationis est vel plus vel minus, quamvis, aliquando, sic exigua quod ipsi ægroto non percipiatur; in hoc statu, minimorum vasculorum, spasmodica constrictio, non solum cutis, sed, (ut infra patebit) corporis aliarum partium locum habet, unde per illa circulatio libera impeditur, et

in largioribus vasis internis accumulatio gignetur; ~~hinc~~ anxietas magna, respiratio ~~laboriosa~~ ribra, hoc tempore, praesertim in intermittentibus, adeo frequenter observata. Citius seriusve frigus cedit caloris sensui, per totum corpus diffuso, magis vel minus intenso, quoad febris speciem et gradum orto, ab cordis ~~actione~~ & magnorum vasorum ~~actione~~ actione spasmum in minora vincente, vel, ut, circulationem reddat ~~ita~~ liberiorem, quam frigoris tempore. Sed hoc in febris statu, ut censeo, plus minusve spasmus vasa constringit, praecipue, in febribus inflammatoriis vel intermittentibus. Etenim, non alio modo, validi tensi pulsus, ardentis caloris, et siccitatis in homine, qui hora jam praeterita, se optime habuit, absque ullis plethorae symptomatibus vel sanguinis lentore, quae accessionem febris subitaneam efficerent, causam probabilem reddere possum, quam quorundam vasorum capacitatem interim ~~esse~~ diminutam esse constrictione spasmodicâ, ~~etiam~~ efficiat sanguinis majorem quantitatem, per laxas, celeritate quam solito majore, circulare supponendo. Hæc minimorum vasorum constrictio

ut opinor, multifariam oriatur, ~~quales~~ viz. corporis frigore subito demissam, sanguinis acrimoniâ ultima vasa stimulante, vel materiâ aliquâ acri vel putridâ, primis viis sive aliis corporis partibus inhærente, per sympathiam systemati injuriam inferente. In hoc modo, ~~facilius~~ pleuritis, aliorumque febrium inflam:matorium, subitæ invasionis causam facilius elucidamus, quam eas deberi plethora, et sanguinis lentori, a perspiratione suppressiâ exortæ, fingendo. Enim, etsi concessum esset, hominem adultum, in statu medio uncias quatuorginta vel quinquaginta, νυχθημερον perspirare, et hanc perspirationem, ex aliqua parte ~~quodammodo~~, obstrui posse, (nam, in vivo nunquam penitus suppressam esse, Sanctorius probat) attamen, corpora nostra tanta cum sapientia fabricantur, et inter emunctoria renum & cutis tanta est sympathia & connectio ~~mutua~~, quod raro accidit, retentum perspirabile, urinâ non excretum esse. Præterea urgere, quod hi febres interdum invadunt, etiamsi perspirationem non diminutam esse,

esse, ob universalem cutis humiditatem, imo etiam totius corporis sudorem, pro certo habemus.

6 Spasmi partialis prædicta opinio, à Hoffman differentius solummodo in hoc, ut ille, spasmum universalem esse supponit, (quod in transitu, impossibile esse affirmo, enim in hoc rerum situ, ab cordis actione suppressâ, mors subita certissimè invaderet) multo melius intermittentium phænomena solvet, quam quivis sanguinis lentor ~~quivis~~ minima vascula obstruens, donec febris violentia, obstructiones diruat et resolvat; quoniam ~~[illegible]~~, nulla causa dari possit, cur, statutis periodis, sanguinis lentor rediret: et ~~pro certo habemus~~ omnibus cognitum est quod, in intermittentibus diu durantibus, sanguinis lentor, in tantum abest ~~[illegible]~~, ut nimis tepuis et fluidus sæpissimè est.

7 Fluida, non solum nimis compacta et spissida, illorum auctâ motione, calore & attritione mutuâ, partes dilutas dissipante, redduntur; sed ob causas easdem acriores fiunt et ad putrefactionem magis ~~[illegible]~~ tendunt.

8 In febribus nervosi systematis irritabilitas, functionum vitalium ac animalium perturbatione, fibrarum tensione magnâ, ob fluidorum auctâ calore, motione atque attritione et sanguinis acrimoniâ, ~~capitis~~ ique ac totius corporis, nervorum praecipue, debilitate; cujuscunque morbi febrilis naturalis effectus, augeatur. Hinc facile cognoscimus, quamobrem febricitantes causâ minimâ in tantum afficiuntur, quod, etiam, cibus mitissimus, vel postura erecta, nimis ~~lo~~ protracta, cordis actionem multum accelerabit, ac febrem augebit.

9 Ex praedictis patet, sitim febrilem causarum sequentium, aliquâ, vel omnibus originem ~~[illegible]~~ ducere.

1 Vasorum exhalantium, oris, faucium, oesophagi, atque ventriculi, constrictione spasmodicâ.

2 Sanguinis partium fluidarum, nimiâ dissipatione, reliquum viscidum et immeabile reddente.

3 Sanguinis acrimoniâ.

4 Humorum putrefactione incipiente, sive alicujus putridi ab intus vel extra in sanguinem absorptione; ~~vel ab effluviis ab externa, vel in parte aliqua absceßu~~.

5 Nervosi systematis, vel solidorum vivorum irritabilitate aucta.

6 In viis primis saburra acri, putrida, vel biliosa.

De quarum singulis, in ordine dicendum est.

10 (1) Vasorum exhalantium, oris faucium œsophagi atque ventriculi, constrictione spasmodica. Quod in febribus, vasa exhalantia oris ~~~~, certe constringuntur, ab eorum ariditate immodica abunde est manifestum; hæc fluidorum immeabilitati, extremitates arteriarum exhalantium in has cavitates aperientium non pervadenti ~~et plerumque~~ plerisque attribuebatur. Sed hanc causam semper locum habere ~~~~ veritati consentaneum non esse ~~~~, ex ægroti consideratione, intermittente laborantis, patebit; qui paulo ante, se bene habuit, paroxysmo accedente, oris et œsophagi, ~~repente~~ in ariditatem, toto paroxysmo, durantem, usquedum sudor se effundere incipit, ac vasorum constrictio ~~~~ relaxatur, harum partium siccitas molesta

molesta discedit, ~~hoc~~ quoque, quando maxima esset, vi ex humorum immeabilitate penderet, etenim, partium fluidarum majore parte dissipatâ, post sudoris adventum, necesse est, eo tempore, sanguinem viscidiorem ac immeabiliorem fieri.

11 Siccitatem oris, linguæ, gutturis, (sitis semper comitatur: hinc in ~~[illegible]~~ intermit. tempibus) non solum in frigore febrili, sed etiam in febris ακμη, donec, spasmus sudoris eruptione, mitigetur, siti perpetuâ æger laborat, non sedanda, etiamsi ad ventriculi distentionem fluida ingurgitet. Idem, etsi gradu minore, in aliis febribus observetur, enim, in continuis ante, quam post Crisim, æger siti plus semper laborat; ~~quamvis~~, partes fluidæ è Sanguine, renibus & cute excretæ, in posteriori multum augentur, ac febris continuatio, sanguinem viscidiorem, quam antea, reddidit.

12 Vasorum constrictio, igitur, sitis febrilis causa est frequentissima et potentissima, in initio præsertim, quando ex maximâ parte causa est sola, quoniam humores acres putridos vel spissos factos fuisse supponi non possit.

13 (2) Sanguinis partium fluidarum nimiæ dissipationi, reliquum viscidum et immeabile reddenti: Quomodo in febribus sanguinis auctus calor ac

motus tenuissima dissipat, ex ~~continuatione~~ ratione volatilita
magna in formâ habitûs surgentis, solum sanguinis
temperati calore, e venis emissi; atque ob fervidarum
partium auctam eliminationem claré apparebit.
Hoc erit evidentius, si vera sit opinio prædicta, nem
perspirationem, quam vulgo putatur, rarius esse
suppressam; propterea quod, quo apertiora sint
emunctoria, cutis præcipue, eo abundantior ejus
excretio. Hic notare vellem, sitim, cutis oris &c
ariditatem, in febrium initio ab hac causâ vix
unquam oriri, sed ob minimorum vasculorum
constrictionem, (ut antea notatum fuit) donec
post aliquod tempus, calor febrilis et aucta circu-
latio, fervidiora sanguinis dissipavit ac compa
et immeabilem reddidit; quando, proculdubio,
sitis fit urgens causa, tam, reliquâ massâ aere
redditâ, blandis partibus orbatâ & ysterra
stimulante, quam, fervidorum immeabilitate
os ac œsophagum aridum reddente, harum partium
minimis vasculis, hærente. Sic videmus eos
qui labore valido se exerceant, et quorum cutis
fervidarum sanguinis à laxatis poris cutaneis
perpetuâ excretione semper madeat siti valid

urgeri, e contrà ignavos, otio sub umbra fruentes, minimum sitire.

14 (3) Sanguinis acrimonia. Sanorum sanguis semper est blandus et acrimoniæ expers, et sin gutta oculo stillata, nullam molestiam adfert, sin, partes excrementitiæ in systemate nimis diu sint retentæ; vel illius calor ac motus multum intendatur, seu blandarum nimia pars dissipetur sicut in omnibus febribus accidit, plus minusve alkalescentiæ acredinem contrahit. Particulæ acres ab aere sanguinem intrent, ut in febribus contagiosis, peste, variolis morbillis &c: contingit; vel cum ingestis intus sumantur, veluti venenorum assumptio. Acrimonia acida vel oleosa in sanguinem aliquando forte viam inveniat.

15 Sed acrimonia in sanguine locum habens qualiscunque sit, systema, præsertim, oris & vascula minima, stimulando, sitim semper parit. quod natura sapienter præcavetur, blanda et aquosa fluida ingerere, excitantis, copia sufficiente, ad acrimoniam diluendam obtundendam eliminandamque. Si acrimonia sit salina

utrum acida alkalina vel muriatica, - quæ aquæ facile commiscet et in ea dissolvitur, ob hanc caussam, largis poculis è systemate citò eluitur. At, oleosa, ob minorem attractionem cum fluidis aquosis diutiùs obstat, atque tardè expellitur: hinc lardum comedentes longo post tempore sitiunt.

16 (4) Humorum putrefactioni incipienti, vire alicujus putridi in sanguinem absorptioni assintus vel extra. Humores in corpore sponte putredi fiunt, quod aliquando, fervido cœlo, cibis putrescentis utentibus ac inediâ laborantibus, accidit. Etiam illi putrescant particulas putridas in aere volitantes ingerendo, ut fermentum agentes et sanguinis totam massam contaminantes: quod in tempestatibus calidis atque humidis, in locis palustribus, nec non nosocomiis et carceribus confertis sæpe contingit. Pluidam putridam diathesim gigni posse pure, ex abscessu in quavis corporis parte absorpto, ut febribus hecticis et tabibus hinc sequentibus cognoscitur etiam quibusdam venenis e.g. viperæ et aliorum venenatorum, morbibus.

17 (4) Calor febrilis ad putredinem humores multum vergere facit, ut spiritu fœtido, fecibus putridis effutis, nausea ac vomitu, eos adeo frequenter comitantibus certè probatur. Cur humorum putrefactio sitim efficeret, ab putridarum stimulo, vasa exhalantia, irritante, et forsan constringente, eque ob calorem magnum putrefactionis processu excitatum, plane apparet.

18 (5) Nervosi systematis vel solidorum vivorum irritabilitatis aucta. Hoc, omnibus auctoribus mihi prælectis, fuit omissum. Atque quoniam sitis, stimulo quodam, illam sensationem efficiente, oritur, vel humiditatis, in ore, œsophago ac ventriculo, defectu, parvas extremitates nervorum in his partibus defendere sufficientis, sive in ventriculo aut fœmdis acrimoniâ aliquâ, consequenter, quo systema irritabilius, eò magis eodem stimulo afficietur, et eo major sitis sensatio; atque quoniam febrium ex naturâ corpus irritabilius reddere tendunt, hæc causa, nullo modo, omitti debeat. Sitis absentia malum est omen, quia sensibilitatis defectum denotat, vel ab virium vitæ languore

aut

perditione. Sic Hippocrates, coacis prænotationibus affirmat "sitis præter rationem soluta in acutis malum."

19 (6) In viis primis saburræ acri, putrida, vel biliosa

Harum ulla, his partibus deposita, sitim stimulis excitabit; etenim si sanus cibum laute conditum ~~calida fum~~ acria aromata, et similia comedat, siti frequenti urgebitur, in horas succedentes, donec, dilutione copiosa, atque ventriculi actione, acrimonia obtundatur vel penitus perdatur. Calor auctus in febribus et ventriculi functiones læsæ, ingesta, ad putridinem plus disponunt quam in sano, quæ etiam ventriculi diminuta expellendi facultate longiorem retentionem efficiente multum augetur

20 Bilis redundantis acrimonia, præsertim si putrescere incipit, sitis fit urgens causa, usque dum expellatur, vel adeo diluatur ut illius acrimoniam perdat; fortasse hinc oriatur, quod in cholera, colica et febribus biliosis, laborantes tantum siti patiuntur; enim bilis acrimonia ventriculum vellicans ~~stimulando~~, sitim perpetuam efficit, eque illum stimulando ac os et œsophagum sympathia afficiendo; nec non eorundem vasa exhalantia spasmo

constringendo. Hinc oris ariditas immodica ac linguæ squalor, quamvis febris parva adsit

21 In febribus, hæ sunt sitis causa frequentissimæ, et quò magis ingravescunt eò plus sitis instabit. Æger systematis delicati quivis, cujus humores ad cacochymiam acrem vel putrulentam vergunt, febre correptus, sitim quoad febris intensionem plus percipiet quam arator robustus staminum firmorum, cujus fluidæ sint boni indolis: tam quia prioris corpus multo est irritabilius ac igitur stimuli (quicunque sit, qui sitim excitet) ad susceptionem aptius, quam ad putrulentam diathesim fluida magis disponuntur. Hinc medicus peritus, non solum fluidarum statum, ac febris calorem, sed etiam sensibilitatis et irritibilitatis gradum, in omni ægroto cautissime pensitabit. Hinc etiam intelligimus, cur sedativa, et alia systematis sensibilitatem diminuentia, sæpe in siti sedanda sunt efficaciissima.

22 De causis sitis febrilis peractis; easdem mitigandi modum aptissimum, tradere, pergo.

23 Curam in causarum ordine tradere meth-
physica postulat; sed quia, causæ prædictæ plen-
existcomplicatæ; brevitatis causâ omnes general-
medendi methodo complectar

24, <u>Tolle causam cessabit effectus</u>, in philoso-
aphorismus est celeberrimus et argumento nostro
aptissimus. Quandoquidem sitis febrilis à febre
ut causa primaria nascitur ~~[illegible]~~, febris cura sitis erit
certissima cura, quodcunque igitur priori inservit
ad posterius quoque conducet. Unde in febribus
inflammatoriis, Venæsectio, etsi rei alienæ videat-
vi antispasmodicâ pollens ac febris violentiam
moderans in siti mitiganda omnium est effica:
:cissima. Sed quoniam febrem curare non sem-
possumus, nobis, ut medicis, incumbit sitis
febrilis ad ultimum posse mitigationem tentare
cui sequentia multum inservient.

25 (a) Aqua purissima. Ut calor et auctu-
sanguinis circulatio, fluidiora dissipat, aquosa, (quæ sanguinem blan-
ac tenuem reddunt) ad sitem sedandam conducere est ma-
:festum. Nihilominus <u>Asclepiades</u> et alii antiquorum
multi, sitis febrilis, aliter quam febris cura, mitigan- om-

omnes conatus vanos, imo noxios, esse affirmant. Sic in Celso legimus "De potione vero ingens pugna est, eoque magis, quo major febris est. Haec enim sitim accendit, et tum maxime aquam exigit, cum illa periculosissima est. Sed docendus est aeger, ubi febris conquieverit, protinus sitim quoque quieturam; longioremque accessionem fore, si quod ei datum fuerit alimentum: ita celerius eum desinere sitire qui non bibit."

26 Sed febribus in curandis, Hippocrates aliter fecit: alimentum humidum, febre laborantibus, utilissimum esse, non solum affirmat; sed aquosorum usum maxime laudat, ut in libro De victu in acutis apparet. Contra senis hujus venerandi auctoritatem, Morton et seculi praeteriti multi, modum Asclepiadeum infeliciter introduxerunt, ac dum sudorifica calidissima exhibebant, potum omnem universaliter prohibuerunt, ne medicamentorum vis, aquosis commixta, diminueretur. Quam miseri febricitantes sic tractati necessario essent, abunde liquet.

27 Hic quaeratur utrum potus calidus vel frigidus, febricitantibus, plus conveniunt? Frigidum

patientibus exoptare, sed mala hinc oriri omnibu
notum est. Febres pleuriticæ, peripneumonicæ, e
mors subita, incantos qui æstuantes gelida ingu
gitarunt, sæpe prostravit. Attamen gelidæ aquæ
potus, febricitantibus, aliquando profuit. Sic in
Commentariis, Baronis Van Swieten legimus, de servo febre
ardente correpto, qui frigidæ aquæ decem lib
:rorum haustu, in duodecim horis, febrem in totum extinxit.
Medicis talia frequenter acciderunt. Sed hinc
aquam frigidam, febricitantibus, bene dari, inferre
est ~~aque~~ absurdum, ac ~~non possumus, quam~~ carnem salitam, lardum
et similia in victu acutorum laudare, quonia
aliquoties horum usus contra medici præcepta
illorum, qui multum exoptaverunt febres
exemit. Hoc & nihil aliud hinc discimus,
quod cum febricitantes gelidum potum multu
efflagitant, omne aliud odio habentes, tunc
sunt indulgendi. Sed prudentis est parvum
semel dare ac sæpius repetere, ut mala hinc
~~forte~~ porro orituri præveniantur.

28 Ex prædictis cognoscitur, aquam calidam
vel frigoris expertem, esse tutissimam. Sed
etiam illius haustus largi sunt vitandi.

Etenim sitientium qui pocula capaciora ingurgitant, ventriculus adeo distenditur, ut orificia ejus convulsivè contrahuntur, anxietatem magnam et alia mala efficiente; aut quantitate adeo irritatur quod ad nauseam ac vomitum excitetur. Sed sæpe, parvis haustibus, sumptus, sanguinem densum ac immeabilem diluit, fibras rigidas humectat, et minimorum vasculorum constrictiones relaxat. Aqua tepescens, ab asso panis immerso, optime datur. Hoc modo tractatus aliquibus fit diureticus. ~~fit~~.

Melissæ, salviæ hyssopi infusiones, febricitantibus utilissimæ quotidianâ experientiâ satis probatur; illorum tamen virtus præcipua de fluido aquoso pendet.

29β Potiones acidulatæ. In siti febrili sedanda acida sunt potentissima. Systematis mobilitatem diminuunt, vasorum exhalantium oris œsophagi ac ventriculi constrictiones relaxant; nec non utilia sunt salivæ fluxum copiosum excitando, fluidorum putredinem corrigendo, et fermentationi obviam eundo. In statu diluto, cum vero sanguini se conjungunt et diureticæ et diaphoreticæ fiunt. Acetici ac aliorum

tamar

farinaceorum decoctiones, vitrioli vel nitri dulci spiritu acidulatæ, in febribus biliosis, variolis malignis, seu in sanguinis putrido diathesi laudes summas inferentur. Sed febribus pleuriticis peripneumonicis ac in quibus sanguinis lentor phlogisticus adest, acida vegetabilia ut Crem: Tartari, acetum, Limonumque succus, in more eodem exhibita sunt aptissima, ut priora qualitatibus astringentibus, plus quam posteriora sanguinem compactum reddunt. Sed an unquam, interne sumpta, sanguinem coagulant, jure quæratur; quippe in vasa lactealia introitum qualitates astringentes ~~negant~~ prohibeant, nisi sint multo diluta; igitur præcipua eorum operatio de ventriculi actione pendet. In febribus quibusdam, ubi fluida aquosa è renibus excernuntur, absque sanguinis commixtione, febrili ardore inspissati, acida, præsertim vegetabilia, eâ cum unita, urinam propriis coloris ac quantitatis reddunt.

30. Liquores acescentes. Hæ ex aliqua parte similes sunt fluidis quæ puris acidis acidulatis, sed in febribus minus sunt utiles, quia ad fermentationem nimium tendunt; hinc eorum flatulentia, quæ plurim

hystericis atque hypochondriacis, ~~naturam reddens~~ praecipue nocent.
Ob eandem causam, ~~haec~~, cerevisia tenuis, nisi ætate matura~~e~~
febricitantibus parcè indulgeretur.

31 Vina acida, prius aquæ copiâ sufficiente diluta, hujus classis sunt optima; ac in languore virium subito maxima sunt utilia, vires ægroti reficiendo et spiritus exhilarando. Etenim hoc in statu invenimus, vini vel spiritûs parvulam, aquosis, additum, sitim, aquâ solâ, efficacius sedat.

32 Fructus Hordæi. Aciditate sua, atque qualitatibus refrigerantibus, sitim febrilem multum mitigant. Hæ minutæ palatum exquisitè afficiunt, et stimulo salivæ fluxum augent. Fructus acido dulces, praesertim drupaceæ et senticosæ Linnæi fragmentorinatur: sunt ~~acida~~ acerbi atque in ventriculo ad fermentationem prona, ideo in febribus tam cavendi, quam liquores acescentes supradicti. Quando hoc in modo non agunt, non solum ad sitim sedandam, sed etiam humores putridos, corrigendos multum conducunt.

33 Quandoquidem acris interni sistendo, aut tollendo ~~qui~~ multum expetitur, sic paratorum, quam in statu crudo, usus, majore incolumitate, liberius indulgeatur

34) Sales neutri. Tartarum vitriolatum, nitrum et tartarus regeneratus, in aquovis diluta, ad sitim febrilem mitigandam, hujus classis sunt efficacissimi. Salviæ aut melissæ infusiones; vel hordei, avenæ seu talium decoctiones, cum parvo nitri et mellis commixtæ, in omnibus febribus ardentis vel inflammatorii generis, potum salutiferum præbent, et Boerhaavio, aliisque rem medicam exercentibus, summis cum laudibus efferuntur. Enim humorum inflammatoriam immeabilitatem solvendo, atque putrefactionem corrigendo, sitim et calorem febrilem maxime sedant.

35 Sales alii neutri easdem virtutes, etiamsi minore in gradu, possident. Tartarus vitriolatus post nitrum, fortasse secundum locum tenere debet; sed quia difficilius solvitur rarius usurpatur. In febribus putridis, ille et Glauberi sal, alii neutris, sunt forsan præferendi; ut, qualitates astringentes sanguinis fractam solutamque texturam corrigunt, et aptam crasin, concretionemque reddunt.

36) Anodyna, Antispasmodica, & Antiseptica. Ex consideratione prædicti No. 18 (2) de sitis febrilis

causis, quomodo, anodyna sitim sedant haud intelligimus; enim nervosi systematis sensibili:tatem diminuendo, sensationem molestam, sitis ideam excitantem extinguunt: nec non constrictiones oris &c: vasorum exhalantium solvunt, quam sitis febrilis causam esse potentem N.º 10 antea fuit probatum. Sic duplici modo ad hoc molestum symptoma mitigandum plurimum conducunt. Attamen in omni febris statu, præcipuè inflamma:torii generis anodyna exhibere nullo modo tutum esse, notatu est necessarium; enim ni evacuantibus plethora diminuatur ac vasorum tensio solvatur, anodyna cujuscunque sint generis, vasorum vim motricem debilitando, et sic obstructionem augendo, noxia fiunt. Verum, postquam venæsectione ac purgantibus satis est evacuatum, experientia quotidiana, anodynorum cautè usurpatorum, præcipuè horâ somni, bonus effectus abunde vincit; inde molesta symptomata excitatum ac animalium functionum perturbatione, orta ut plurimum amoventur, febricitantis vires redintegrantur, et sitis molesta sensatio multum sedatur

37 Antispasmodica, potestate constrictiones solvendi p
rae quoque maxime sunt utilia: ~~Ac~~, praesertim qu
stimuli alicujus sunt expertia, ut Sal sedat: Cam
Contrayerv: & Crocus. Enim ~~quae multum sunt ac~~
stimulo acriora calorem circulationemque augent, et itaq
in omnibus febribus sunt noxia, nisi putridis et lentis ~~feb~~
nervosis, in quibus, hujus generis medicament
ad spiritus excitandos, atque deficientem circula
-nem augendam, et etiam ad morbi crisin felice
producendam naturae conatus promovendo, vald
sint necessaria.

38 Antiseptica, ut talia, ad humorum putre
acrimoniam corrigendam conducunt, ad quam
omnibus febribus ob auctum calorem atque irregu
secretiones majore vel minore gradu sunt pron
Praeterea plurima antiseptica, praesertim salin
acidi generis, sedativa et antiphlogistica sunt
idcirco insiti febrili sedanda, sono cum comm
usurpantur

39 (n) Epithema et Enemata. Horum pri
Boerhaavio multum laudantur, ac in febrib
inflammatoriis, quando calor est maximus et c

ardissim

ardissima, haud dubie multum efficerent; sed quia ~~[illegible]~~ illorum usus molestiam adfert et nisi summa cum cautione usurpata, febricitentem frigori exponunt, ex frequentis repetitionis necessitate, et inde frigidi aeris ad corpus nudum admissione, praesertim tempestatibus frigidis, quum hi febres frequentius ~~grassent~~ grassantur, minus boni, quam aliter expectaretur, afferunt. Pediluvia sunt utilissima, ac minimo c: labore efficienda, etiam in omnium febrium initio, variolarum &c: maxima emolumenta adferent; praecipue quando Delirium febrile adest, vasa infimarum corporis relaxando, sanguinem illac determinando, et sic a capite revellendo.

40 Enemata quae putridos humores, febris ~~augenda~~ fomitem efficientes, ex intestinis eluunt, ac viscera fovent; nec non sanguinem, aquosis, mediantibus vasis lacteis, suppeditant; quoque ad sitim febrilem sedandam, multum conferunt.

Si quid desit operi, id supplet aetas: & si qua sunt
dicta juveniliter, pro indole accipiuntur.

Quinctil:

Medical Thesis

The question appointed me, for the subject of the following disquisition, as candidate for the honorable degree of bachelor in physic, agreeable to the regulations made by the worthy professors & medical Trustees of this college is, What are the causes of thirst in fevers, & what are the most probable methods of relieving it? Pol Jonathan Elmer

When I consider the frequency of fevers as a concomitant on all acute & many chronic diseases, & the constancy of this symptom in every fever; I am too well convinced of the importance & dignity of what I am engaged in, to think myself capable of doing justice to the subject: I shall however attempt, in as brief & explicit a manner as I can, to give a rational solution of the question proposed; relying on the candor & generosity of my very learned & venerable professors for a favorable reception of the same.

It would be taking up too much time to enquire into all the physical causes of thirst in a healthy state; it is sufficient to observe that, from the constant discharge & dissipation of the aqueous parts of our fluids, by the renal, cuticular, & other emunctories, and their spontaneous disposition to become acrimonious when long retained in the system, the taking in such a quantity of drink as not only to maintain their proper fluidity, but also wash off those particles that have become too acrid is indispensably necessary. The allwise author of our nature has therefore implanted in us a particular sense

which we call thirst, whenever the state of our humors is such as demands a supply of diluting particles to preserve or restore their due temperature & tenuity.

So long however as we remain in a state of health, & all the functions of the body are regularly & equably performed, this necessary supply is moderate, & the sensation of thirst, or desire of drinking is neither very frequent nor intense. But, whenever the functions are disturbed, & the circulation of the blood increased from any cause, so as to bring on a fever, this symptom becomes very troublesome, & frequently unextinguishable. In order then to proceed methodically it will be proper first, to consider a little what are the causes & effects of a fever on the human body, from whence, by just & rational inductions, we shall probably obtain an adequate & satisfactory knowledge of the causes of this preternatural thirst in fevers, as well as be able in some measure to point out the proper methods of removing the same.

Whether the proximate cause of a fever be a lentor of the blood according to the opinion of Boerhaave, a spasmodic affection of the nervous & vascular system as Hoffman supposes, or an increased stimulus of the heart from some prevailing acrimony, I shall not pretend to determine; but, in my opinion none of them are strictly true in all kinds of fevers, for though in fevers of the ardent and inflammatory kind, the Boerhaavian doctrine of a lentor of the blood seems the most probable, from the great heat, full & strong pulse, as

well as the apparent density of the blood when drawn from the body; yet, in intermittent & slow nervous fevers, a spasm & acrimo:nious state of the juices seem more likely to be the causes; & fevers of the most ardent kind we are assured from daily experience fre:quently arise from acrid matter taken into the blood, as in the small pox, measles, &c.

In the beginning of all fevers there is more or less of an horripi:lation or shivering (tho' sometimes so small as to be scarce perceptible to the patient himself; during this state there is manifestly a spasmodic contriction of the minima vascula not only of the skin, but, (as will appear from what will be said hereafter) of other parts of the body, whence the free circulation of the blood thro' them is impeded, and of consequence, an accumulation happens in the larger vessels of the internal parts, hence the great anxiety, quick & laborious respiration, so frequently observed at this time especially in intermittents. Sooner or later this gives way to a sense of heat throughout the body, more or less intense according to the species and degree of fever, from the action of the heart & large vessels having in some measure overcome the spasm upon the smaller ones, so as to render the circulation thro' them more free than in the time of the chill; but in my opinion even during this stage of a fever there is more or less of a spasm on the vessels, particularly in those of the inflammatory & intermittent kind; for I know no other way of accounting for the strong tense pulse, excessive heat, and

dryness in a person who but an hour or two before was in perfect health, with no symptoms of a plethora or lentor of the blood, that could cause the sudden accession of the fever, than by supposing the capacity of some of the vessels is diminished, by a spasmodical constriction of them, causing a greater quantity of blood to pass through the relaxed ones with greater celerity than before. This constriction I apprehend may arise from a sudden exposure of the body to the cold, an acrimony in the blood stimulating the ultima vasa, or any acrid or putrid matter lying in the primæ viæ or other parts of the body affecting the whole system by sympathy. This seems a much more probable way of accounting for the suddenss seizure of pleurisies & other inflammatory fevers, than, by supposing it to be owing to a plethora & lentor from the checking of perspiration; for tho' it be granted that an adult person perspires in common between 40 & 50 ounces in 24 hours, & that this can by some means or other be partially stopped, (for it never can be entirely obstructed in a living body) yet so wisely are our bodies constructed, and such is the sympathy and mutual connection between the emunctories of the skin & kidneys, that it rarely happens, but that the retained perspirable matter is carried off by the renal passages. not to insist that these fevers sometimes attack when we have sufficient evidence that there is no abatement of perspiration from the universal moisture of the skin & even sweating of all the body.

This opinion of a partial spasm, (differing from that of Hoffman's only in his supposing it to be universal, which by the bye cannot be the

case for whenever that happens instantaneous death must be the consequence, from a suppression of the action of the heart) will also much more rationally account for the phenomena of intermittents than any supposed lentor of the blood, obstructing the small capillary arteries till the violence of the fever either breaks down or forces on the obstruction, as no cause can be assigned why a lentor should happen at certain periods, and we are well assured that in intermittents of long standing there is so far from being a lentor in the blood that it is often too thin, and fluid.

Besides the opinion of obstructed perspiration bringing on a lentor of the blood seems to me inconsistent, for as the perspirable matter is the most subtile & fluid of all our humors (except the nervous fluid if any such there be) a retention of it one would imagin must render the blood more fluid than when it is dissipated by a plentiful perspiration, and even in inflammatory fevers, the tenacity of the blood seems rather the effect of the increased heat & motion of the same, dissipating its aqueous parts too copiously by perspiration, than the cause of the fever at its beginning, tho' it may conspire to keep up the same & even render it fatal by the humors becoming totally impervious unless a sufficient quantity of diluting liquors be constantly taken in to supply the place of what is discharged.

The fluids are not only rendered too thick & tenacious in fevers by the increased motion heat & attrition of them dissipating their thin aqueous parts, but they also become more acrid & disposed to putrefaction from the

× hence we understand the reason why people reduced very low by a fever are so easily affected by the smallest cause that even the mildest food or setting up a little too long in the bed will greatly quicken the action of the heart & increase the fever.

same causes. The irritability of the nervous system is likewise increased in fevers, by the perturbation of the vital & animal functions, the great tension of the fibres from the heat & attrition of the fluids, and the increased acrimony of the blood.*

From what has been said it seems evident that the preternatural thirst in fevers is owing to some or all of the following causes.

1 A spasmodic constriction of the exhaling vessels of the mouth fauces, œsophagus & stomach.

2 Too great a dissipation of the aqueous particles of the blood leaving the remainder too viscid and impervious.

3 An acrimony in the blood.

4 An incipient putrefaction of the humors, or the absorption of putrid particles into the blood either ab extra or from an abscess in any part

5 An increased irritability of the nervous system or solida viva

6 An acrid, putrid or bilious saburra in the primæ viæ.

Of each of these we shall treat in order.

1 <u>A spasmodic constriction of the exhaling vessels of the mouth, fauces, œsophagus & stomach.</u> That the exhaling vessels of these parts are actually constricted in fevers is sufficiently evident from the excessive dryness of the same which has generally been attributed to the imperviousness of the fluids being incapable of passing thro' the small extremities of the

exhaling arteries opening into these cavities; but the improbability of that being always the case will appear from only considering that a person laboring under an intermittent who but just before was apparently well upon the accession of the paroxysm, his mouth & throat become suddenly very dry & husky & continue so during the whole fit till a sweat begins to break out & the constriction of the vessels being relaxed the excessive dryness of those parts goes off & that too at the time when it should be greatest if it was only owing to the imperviousness of the humors, for a greater quantity of their fluid parts being discharged after the coming on of the sweat than before they must of consequence be rendered more viscy & tenacious at that time.

Thirst always attends a dryness of the mouth tongue & throat, hence in violent tertian fevers not only in the cold but during the excess of the hot fit until the spasm is relieved upon the breaking out of the sweat the patient is tormented with a continual thirst not to be allayed by frequent drinking even in quantities so large as to distend the stomach by its bulk. The same is observable tho' not in an equal degree in other fevers, for in these the patients are always more thirsty before than after the appearance of the crisis tho' the aqueous discharges from the blood both by the skin & kidneys greatly exceed in the latter stage & the continuance of the fever has rendered the blood much more impervious now than in the beginning of the same.

A constriction then of those vessels which in a natural healthy state perpetually exhale a thin bland aqueous fluid into the cavities of the mouth

fauces oesophagus & stomach to moisten the same is evidently one of the most frequent & powerfull causes of thirst in fevers, especially in their beginning when for the most part it is the only cause, as the humors then cannot be supposed to have become very viscid, acrid or putrid.

2 Too great a dissipation of the aqueous parts of the blood leaving the remainder too viscid and impervious. How the increase of heat & motion of the blood in fevers dissipates its thinner parts is easily understood from considering its great volatility rising in the form of halitus only with the heat of temperate blood when drawn from the body as well as from a greater quantity of blood being applyed in a given time to the mouths of the secretory & exhaling vessels of the kidneys & skin & of consequence a more copious separation of the thin fluids by these & other emunctories, & if what we have already said be true that perspiration is less frequently obstructed in fevers than is commonly imagined it will be still more evident, because the more open the emunctories are especially of the skin the more copious & free will be the discharges by the same. But here I would observe that the thirst & dryness of the skin mouth & throat in the very beginning of fevers is rarely owing to this cause but to a constriction of the small capillary vessels as we before observed till after having continued for some time the heat of the fever & increased circulation has dissipated the thinner parts of the blood & rendered it viscid & impervious when it undoubtedly proves an urgent cause of thirst both by the remaining mass becoming acrimonious from the loss of the bland watery parts stimulating the system & by the imperviousness of the fluids rendering the mouth & throat

dry

by their hesitating in the small exhaling vessels of those parts, thus we see people who labor hard in very hot weather & who have their skin continually wet with the copious discharge of the fluid parts of the blood thro' the relaxed cutaneous pores are very thirsty and drink a great deal whereas those who labor none in cool weather drink very little.

3 An acrimony in the blood. The blood in a sound healthy state is always mild & void of acrimony for a drop of it being put into the eye causes no pain at all, but as it is spontaneously disposed to alkalescency, if its excrementitious parts are by any means retained too long in the system, if the heat & motion of it be greater than usual, or too much of its bland fluid parts are dissipated as happens in all fevers it contracts more or less of an acrid alkalescent taint. Acrid particles may be received into it from the air as happens in the small pox measles &c. or they may be taken in with the ingesta. — An acid or oily acrimony may possibly sometimes also find its way into the blood. But whatever kind of acrimony it is that prevails in the blood thirst is always the consequence from its stimulating the system particularly the small capillary vessels of the mouth & throat, which is a wise provision of nature exciting us to take in bland watery fluids in sufficient quantity to dilute, obtund & eliminate the same. If the acrimony be of the saline kind whether acid, alkaline, or muriatic as it readily mixes with & dissolves in water it is therefore sooner washed out of the system by plentiful drinking; but if it be of the oily kind, from its less attraction or miscibility with aqueous fluids its more pertinaceous & longer in being expelled, hence eating of fresh oily bacon renders us thirsty for a very long time after.

4 Putrefaction of the humors. The humors may become spontaneously

putrid in the body as happens sometimes in very hot weather, using a putrescent diet, long fasting &c:, from the taking in of putrid matter or particles from the air acting as a ferment & contaminating the whole mass of blood as is the case in warm moist season in low fenny countries, & also in crouded hospitals & jails where, from the number of infected persons & the want of a free circulation of the air, it becomes saturated with the putrid effluvia that exhales from the sick; or the fluids may contract a putrid diathesis by the absorption of matter from an abscess in any part of the body as appears from the hectic heats & consumption of the body that follows, or by some kinds of poisons as particularly the bite of a viper & some other venomous animals. The heat of a fever greatly disposes the humors to putrefaction, as appears from the foetid breath, loose putrid stools, nausea & vomiting so common in fevers. Why a putrefaction of the humors should occasion thirst is evident from the stimulus of the putrid particles irritating & probably constricting the exhaling vessels of the mouth throat & stomach, as well as the great heat which is excited by the putrefactive process in the body.

5 <u>An increased irritability of the solida viva or nervous system</u>. This seems to have been overlooked by all authors that I have ever yet read, but if thirst be owing to some stimulus exciting that sensation either from the want of a sufficient moisture in the mouth throat & stomach to sheath & defend the small extremities of the nerves in those parts, or from some acrimony in the stomach or fluids, of consequence the more irritable the system is the more it will be affected by the same stimulus, & the greater will be the sensation of thirst; and as it is one of the natural consequences of fevers to render the body more irritable, this cause ought by no means to be overlooked. The absence of thirst in fevers has

* Sitis praeter rationem volutas in acutis malum.

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always been looked upon as a bad symptom, because it supposes a want of sensibility either from a failure of the vires vitæ or its being in some measure destroyed by the violence of the fever.×

6 Acid putrid or bilious saburra in the primæ viæ. Any of these being lodged in those parts by their stimulus will excite thirst, for if a person in health takes food that is highly seasoned, hot pungent spices, salted flesh & the like he will be troubled with frequent thirst for some hours after till by plentiful dilution & having undergone the powers of digestion the acrimony is obtunded or entirely destroyed. The increased heat & depraved functions of the stomach in fevers dispose the ingesta to become more acid & putrid than in a healthy state as well as their being retained longer there from a weakness of its expulsive faculty. Any of these substances lying in the primæ viæ will prove the cause of thirst by acting as a fomes to keep up & increase the fever as well as by their stimulating the stomach & thus exciting that sensation. A redundance of bile in the first passages especially if it has become putrescent, by its acrimony excites an unsatiated thirst till it is expelled or so far diluted as to destroy its acrimony; probably it is to this cause alone that in a cholera, bilious colics, & fevers, ~~that~~ patients suffer so much from thirst, for the acrimony of the bile vellicating the stomach renders thirst incessant, & not only by its stimulating the stomach but by its affecting the mouth & throat by sympathy causing a spasmodic constriction of the exhaling vessels of the same; hence the excessive dryness of the mouth & foulness of the tongue in those complaints when there is but little fever present.

These are the most common causes of thirst in fevers, & in proportion to the degree of them will be the intensity of the same. Thus a person of a fine delicate system whose humors are already disposed to an acid or putrescent

cacochymia will, upon the accession of a fever be much more sensible of thirst than an athletic of a firm coarse stamina, whose humors are all mild & balsamic, because the former has a body much more irritable & therefore more susceptible of the stimulus whatever it be that excites thirst, as well as his fluids more disposed to an acrid putrescent diathesis, hence we see the necessity of taking into consideration not only the state of the fluids & intensity of the fever, but also the condition of the solids with regard to their degree of sensibility or being more or less susceptible of a stimulus, & hence we understand why sedatives & other medicines that take off the too great sensibility of the system often prove effectual in allaying the sensation of thirst in fevers.

Having said thus much of the causes of thirst in fevers I proceed to treat of the methods of relieving it.

Tolle causam et tollitur effectus is a celebrated maxim in philosophy & strictly applicable to the present case, for as thirst in fevers is owing to the fever as its primary cause, the removal of the fever will of consequence remove the thirst as its effect; therefore it is evident that the most sure & effectual method of removing the thirst in fevers is to cure the fever, whatever then is serviceable in the cure of a fever must also be of use to relieve the preternatural thirst that attends it, hence venesection in ardent & inflammatory fevers tho' seemingly foreign to the purpose, by its moderating the violence of the fever & proving antispasmodic by taking off from the too great tension of the vessels is of all other means the most effectual in moderating the thirst. But as it is not always in our power to remove the fever at once it is incumbent on us as practicioners in the healing art to palliate the same as far as may be. For which purpose the following particulars are most effectual . . . . viz.

a Pure Water. As the increased heat and circulation, dissipates the fluid parts of the blood, it is evident that watery drinks are highly serviceable in allaying febrile thirst. — Asclepiades however and many of the ancients contend, that it is unnecessary & even prejudicial to attempt allaying the thirst in fevers, saying that our whole scope should be to cure the fever, & then the thirst will naturally cease of itself. Thus we read in Celsus[a] De potione vero ingens pugna est, eoque magis, quo major febris est. Hæc enim sitim accendit, et tum maxime aquam exigit, cum illa periculosissima est. Sed docendus est æger, ubi febris conquieverit, protinus sitim quoque quieturam; longioremque accessionem fore, si quod ei datum fuerit alimentum, ita celerius eum desinere sitire qui non bibit. But Hippocrates used a very different method in the cure of fevers, for he not only assures us that a moist diet is useful to febrile patients, but he likewise gave them plenty of watery drinks as is evident from

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(a) Lib: iii c: 6.

his Book de victis in Acutis.

Notwithstanding the authority of that divine old man, Morton & many others of the last century unhappily introduced the Alexipharmic method into practice; and while they exhibited the warmest Sudorifics, carefully prohibited all manner of Drink, lest the efficacy of the medicines should be weakened by dilution with the watery liquors drank. But it is evident enough how miserable the condition of the patients must have been who were treated in this manner. And this cruel method is now justly rejected by all prudent physicians.

But here it may be asked whether it is best to give drink that is cold or hot to febrile patients? We know from experience that cold drinks are the most desireable & pleasing; but then they are attended with bad consequences, as appears from the most certain observation. The most fatal Pleurisies, Peripneumonies, & sudden Death having often followed, when people being much heated, have drunk liberally of cold liquors. It cannot however be denied but that the drinking of cold water has been sometimes very serviceable

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(b) De Genuina febri curandi methodo p: 3.

to febrile patients. Shelhammer[b] says he knew of a servant afflicted with an ardent Fever who not being well looked after greedily drank above 10 pounds of cold water & by that means so far extinguished the Fever that he was perfectly well the next morning. Similar instances are frequently observed by practitioners. But we cannot reasonably conclude from these extra-ordinary cases that cold drink ought to be administred to febrile patients; no more than one can recommend Salt Beef, Bacon & the like in the diet of such patients because sometimes Fevers have been cured by eating these contrary to the advice of the physician, when the patient has had a very great desire for them. All we can infer from hence is, that when patients have a strong desire for cold drink, with an aversion to every thing else, they ought to be indulged; but then it seems most prudent to give them small quantities at a time, & often repeated, instead of drinking great draughts at once, as thereby bad accidents may be prevented.

From what has been said it is very evident that warm drink, or at least that which is not cold, is the most safe for allaying febrile thirst. But

Mouth

But even warm drink ought not to be taken in large quantities at a time. For when thirsty patients indulge themselves in drinking too much at once, the Stomach is often so far distended that its orifices become contracted with a convulsive force occasioning great anguish & other bad symptoms, or at least, it so irritates the Stomach by its bulk as to occasion Nausea & vomiting; but being taken often in small quantities, it dilutes the blood rendered impervious by the increased perspiration & heat of the Fever, it moistens the rigid fibres & relaxes the constrictions of the capillary vessels. Spring water rendered tepid by immersing a Crust of wheat Bread well toasted into it is the most eligible method of drinking water, the toast rendering it Diuretic at least to some patients.

Weak Infusions of Sage, Baum, Hyssop &c: are also proper drinks in Fevers & in common use with most people; their principal efficacy however depends on the watery fluid.

(b) Acidulated Drinks. Acids are very powerful in allaying febrile thirst, by diminishing the mobility of the system, by relaxing constrictions of the exhaling vessels of the

Mouth

+ Lemonade is likewise a very elegant & agreeable Drink in Fevers, is Diuretic & Diaphoretic

mouth, Œsophagus & Stomach, & exciting a copious flow of Saliva; as also by correcting the putrescent acrimony of the fluids & resisting fermentation. In a dilute State they unite with the Serum of the Blood & prove Diuretic & Diaphoretic. Decoctions of Barley & other farinaceous substances acidulated with the Spirit of Vitriol or dulcified spirits of Nitre, is the best drink that can be given in Bilious Fevers, the malignant Small Pox, or wherever there is a putrid Diathesis of the fluids; but in pleurisies peripneumonies & other disorders attended with a phlogistic lentor of the Blood, the vegetable acids, as Vinegar & Tartar, exhibited in the same manner, prove the most salutary, as the mineral acids by their astringent quality condense the blood more than the vegetable acids, & therefore are not so proper in the latter case. But it may be questioned whether they ever coagulate the blood by being taken internally, as they are prevented by their constringency from entering the lacteals, unless very much diluted; their chief operation therefore must depend upon their action on the Stomach.

In some Fevers where watery liquors run off by the Kidnies without mixing with the Blood on account of its being inspissated by the violent heat of the Fever, Acids, particularly the vegetable mixt therewith soon render the Urine of its due colour & quantity.

(c) Acescent Liquors. These in some respects are similar to drinks acidulated with pure acids. But they are less serviceable in fevers on account of their tendency to fermentation. Hence their flatulency which renders them often very prejudicial particularly to hysterical & hypochondriacal persons. Thus small Beer, especially when new, should be sparingly drank by febrile patients, but may be more freely indulged when mellowed by age. Tart wines, diluted with a sufficient quantity of pure water is the best of this class & often highly serviceable in a weakness & languor of the vis vitae, by increasing the same & raising the spirits. For in this case we often find that Wine or a small quantity of spirit added to the watery liquor allays the thirst much better than water alone would do.

(d) Summer Fruits. These by their tartness & refrigerating quality greatly moderate the febrile thirst. They are more or less poignant to the taste, & by their stimulus increase the flow of Saliva.

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× As much of their contained Air is expelled by Baking & Roasting, the use of them may be indulged with much more safety after having undergone that process than in their crude State at least some of them.

The Fructus Hordei or Fructus Acido Dulces, particularly the Drupacea & Senticosa of Linnaeus's Natural fragments are acescent, apt to ferment in the Stomach & therefore equally prejudicial on that account in fevers with the acescent liquors just mentioned. Where they are not attended with that effect, they prove serviceable also by correcting the putrescency of the humours & relaxing the fibres.

(c) Neutral Salts. Tartar Vitriol, Nitre & regenerated Tartar are the best of this class for quenching thirst, when dissolved in some aqueous fluid. Infusions of Sage, Baum, or decoctions of Barley, Oats & the like farinaceous substances, with a portion of Nitre & Honey dissolved therein, makes the most salutary drink in all fevers of the ardent & inflammatory kind. For by dissolving the inflammatory imperviousness of the humors & resisting putrefaction it greatly allays the febrile heat & dryness. Boerhaave highly extols a decoction of Barley, Honey & Nitre in all ardent & inflammatory fevers & I believe there are few practitioners who are not convinced of its good effects in those cases.

The other neutral Salts are possessed of the same virtues though not all in an equal degree. Vitriolated

Tartar

Tartar is perhaps the next in degree to Nitre tho' being more difficultly soluble is not so much in common use. In Fevers of the putrid kind Tart: Vitr: & Sal Glaub: are perhaps preferable to any of the other neutral Salts as being possessed of a contringent quality by which they correct the broken & dissolved texture of the blood & restore its proper crasis & consistence.

(4) Anodynes, Antispasmodics, & Antiseptics.

If it be considered what was said N.5 on the causes of thirst in Fevers, it is easily understood how Anodynes diminish febrile thirst, for by lessening the sensibility of the nervous System they remove that uneasy sensation which excites the Idea of thirst. They likewise relax the con=-striction of the exhaling vessels which we said before was one great cause of thirst; so that by this double action they must needs prove highly serviceable in removing this troublesome symptom. It is necessary however to observe here, that it is by no means prudent to exhibit Anodynes in every Stage of a Fever especially those of the Inflammatory kind. For unless the Plethora be diminished & the tension of the vessels removed by evacuations, Anodynes of what kind soever prove injurious, by weakening the vis motrix of the vessels & thus

increasing

the obstruction, but after proper evacuation by Bleeding & purging) daily experience evinces the good effects of Anodynes cautiously administered, especially at bed-time, as thereby all those troublesome symptoms are removed that arise from a perturbation of the animal vital functions, the strength recruited & the uneasy sensation of thirst greatly moderated.

Antispasmodics as being sedative & endowed with a power of relaxing constrictions prove likewise serviceable here; those especially that are void of any great degree of stimulus as Sal Sedat: Camphore Contrayerva & Saffron; for such as are very acrid by their stimulus encrease the heat & circulation & therefore on that account, are prejudicial in all fevers unless where the vis vitae is languid & the circulation depressed as in low putrid & nervous fevers, in which case medicines of that kind are very necessary in order to raise the spirits, quicken the languid circulation and assist nature in bringing the disease to a happy Crisis.

As for Antiseptics as such they are of use in correcting the putrescent acrimony of the fluids to wh. they are more or less disposed in all fevers, by the increased heat & irregular secretions in the same, besides wh. most Antiseptics, particularly the saline & acid are Antiphlogistic & sedative & are therefore serviceable

on those accounts in allaying the thirst in fevers.

(7) Epithems & Clysters. The former of these have been much recommended by Boerhaave & some others, & in ardent & inflammatory fevers where the heat is intense & the skin very dry they no doubt prove serviceable, but as the use of them is troublesome, & unless used with the greatest caution expose the patient to take cold from the necessity of their being frequently changed & thereby admitting the cold Air to the naked body, especially in cold weather when these fevers are most common; I am apt to think they are not attended with so good effects as might otherwise be expected. Pediluvia or bathing the feet in warm water is the most useful & practicable, & highly serviceable in the beginning of all Fevers, the Small Pox &c: and where the Brain is much affected as in a Delirium by relaxing the vessels of the lower extremities, soliciting the Blood that way & thereby causing a revulsion from the head.

Clysters by washing out the putrid humors of the Intestines wch act as a fomes to increase the fever, by fomenting the Bowels & supplying the Blood with aqueous particles, by means of the absorbent & lacteal vessels, of the Intestines doubtless assist in allaying the febrile thirst.

Finis.

To William Shippen jun^r. M.D. professor of anatomy and surgery in the college of Philadelphia.

Sir

In your last course of anatomical demonstrations, when treating of the structure & function of the eye, I observed that, contrary to what you formerly taught in your preceeding courses, you gave it as your opinion, that the choroid coat of the eye was the immediate organ of vision, or that part on which the image of the object is painted, & communicated to the sentient principle: but, from what you then said, I was not perfectly certain that I did not misunderstand you, till your late demonstration of the fabric of that delicate organ, at the request of D^r. Smith in the college, convinced me that I had not mistook your meaning.

As I can by no arguments, convince myself to be of your opinion, in that particular; I hope you will pardon me for assuming the freedom, of communicating to you, in this epistolary manner my sentiments with regard to the same, & the reasons for my opinion; a freedom Sir, which I should by no means dare to make use of, was I not fully convinced of your candor & generosity, & the pleasure you take in seeing your pupils assiduous in the pursuit of usefull knowledge; And

shall look upon it as a distinguished favor to be convinced of my error, if, after what I shall advance, you should still think me to be in the wrong.

The opinion of the choroid coat of the eye being the immediate seat of vision, is principally founded on the famous experiment of Mariotte, first made public in the year 1668, as appears from Birch's History of the royal Society, and since repeated tho' with some little variations by many others, particularly Picard, M. St Yves, le Cat & others of the parisian academy; vizt. let a person measure the heighth of his eyes upon a wall, & there make two black spots at the distance of about 4 Inches, or equal to that of the eyes from each other; & then shutting the left eye, & directing the right one towards the left spot, let him recess backwards by degrees, and at a certain distance the right spot will become invisible. This happens, he says, when the spot is opposed so obliquely to the right eye, that the axis of vision falls at the distance of a sixth part of the diameter of the eye, measuring from the nose, which is found to be, where the optic nerve is inserted, at the bottom of the eye; hence he concluded, that the retina, which is an expansion of this nerve, was not the organ of vision, for if so this spot would not be blind.

S^t. Ives in his Treatise on the diseases of the eyes, & le Cat have adduced many other arguments to support this hypothesis; nay, they go so far as to assert, that the retina serves for no other purpose than moderating the rays of light in passing to the choroides, & prevent their impinging too violently on the same so as to excite a disagreeable sensation, in the same manner as the epidermis serves to moderate the sense of touch, which otherwise would be too exquisite and even unsupportably painful. They allege that the retina, though a production of the medulla of the brain, is insensible, but that the choroides is very sensible, & therefore must be the part on which the visual object is impressed so as to be communicated to the Brain; & they endeavor to prove by an experiment that this is actually the case, for they tell us, that, by taking off the back part of the sclerotica, & laying the choroides bare, taking care to preserve that membrane entire; and placing a lighted candle, in a dark room, before the pupil of that eye, the image of the candle will appear inverted on the choroides. Afterwards, if the choroides be taken off, without damaging the retina, & the light placed as before, it will appear projected on an oiled paper about 2 lines distance beyond the retina. Tho' this experiment be very simple, it seems to prove (say they) that the

choroides is the principal organ of vision, & that the retina, by reason of its transparency, serves only to modify the pencils of the rays of light which pass through that membrane, & may therefore be compared to the glass of a mirror, thro' which the light passes, & the choroides to the quicksilver of the same which recieves the image, or on which the representatation of the object is made.

Tho' these experiments at first view may appear in some measure conclusive, yet I am much mistaken, if, upon proper examina=-tion, they are not only found insufficient to support that doctrine, but often serve to prove that the retina is indubitably the immediate organ of vision, agreeable to the unanimous consent of all authors, antecedent to those Gentlemen above mentioned, & to the opinion of the best modern physiologists particularly Morgagni, Boerhaave, Haller and Pottersfield.

Mariotte's experiment, on which so much stress is laid, proves no more, than that the spot where the optic nerve enters the globe is insensible to the rays of light; but on what does this depend? Is it owing to the defect of choroides in that place, as Mariotte alledges, or, is it not rather owing to some peculiarity in the structure of that part?

It is well known to all anatomists, that an artery of a considerable

sie enters the eye nearly in the center of the optic nerve;* this may probably be the cause of that spot appearing blind: but if it should be objected with *Mariotte*, that this vessel is too small to cause so large a dark spot as by experiment is found in the eye, other causes may be assigned, where this objection can have no weight.

The celebrated Baron *Haller*, one of the best anatomists and physiologists, perhaps, of the present day, says, that where the optic nerve begins to expand, so as to form the retina, there is a white porous cellular substance, more obvious in birds & some kinds of fishes than in the human species, incapable of being affected by the rays of light, which renders that part blind.

To say that the retina serves only the purpose of an epidermis to moderate the impression of the rays of light, or being a production of the brain, is therefore incapable of sensation, are positions so absurd and extravagant, that they serve only to convince us to what a heighth of folly, and strange infatuity, a preconceived opinion may lead us. What! that our alwise architect should, contrary to his usual oeconomy & simplicity, cause the optic nerve to arise in a particular manner from the brain, to run in so remarkable a direction for a

* I had the good fortune to see this artery very distinctly in the eye of a calf w.^h I dissected for Dr *Morgan* not less so as well as its most beautiful distribution on the retina & vitreous humor of the same.

× that the nerves which have ever been looked upon as the immediate organs of sensation should be void of sense —

considerable length, till it has pierced the globe of the eye, & then expand in a most beautiful manner, into a very fine delicate membrane, on the inside of the choroides, to serve only the purpose of an epidermis to that coat, which according to them is only a production of the pia mater.ˣ — strange indeed! too strange & improbable to be admitted by any who are not blinded by prejudice or preconception.

Its needless to take up your time in a formal refutation, of these & many other such trifling arguments, which the favorers of that doctrine, have made use of to support it; we shall therefore only attempt to demonstrate, that the image of the object is pictured on the retina, & that this is the immediate organ of vision, notwithstand-ing all the objections that have been offered against it.

If we attend carefully to the experiment of Sr Ives, by which he endeavors to prove that the image is painted on the choroides & not on the retina, we shall readily discover it to be fallacious, & consequently of no weight, for he says, after the choroides is taken off, the image will be seen projected on an oiled paper about two lines distance from the retina; if this proves any thing it is, that the sclerotica is the immediate organ of vision, for the choroides being in contact with the retina in a natural state, & not above one of 2 lines thick, the image in that case extended as far as the sclerotica.

Boerhaave, Haller, Potterfield, & many others have made the same experiment with the greatest care & accuracy, but they all say expressly, that the image is painted on the retina, ~~& as they are authors of strict veracity, I think we may safely depend on their ipse dixerunt~~.

The extreme tenuity of the retina will readily cause a deception in the experiment, for according to the accurate computation of Dr. Wintringham this membrane does not exceed the $\frac{1}{1171}$ of an inch in thickness. How rational then, is it to suppose that St. Yves might be deceived, & that the image was actually painted on the retina, instead of the choroides, in the first experiment; especially as he was prepossessed with his favorite theory? And how easy is it to miss the exact focal point, since it is well known, that the space of a line or two, (vastly more than the thickness of the retina), does not perceptibly alter the appearance of an object, contracted to a focus by a lens? The least alteration in the figure of the eye also, will of consequence alter the focal point.

What effect the rays of light have, on the organs of vision, in order to excite the idea of an object in the mind, is, perhaps, impossible to be determined; but, if I may be allow'd a conjecture, I should imagine it probably depend[s], on a certain determinate change or impression, made on the nerves, by the rays of light striking them

with a certain momentum. I say, with a certain momentum for if the Newtonian doctrine of light & colors be true, which supposes every ray of light to be made up of particles of different magnitudes, I must confess, I have no other idea of the manner in which colors are painted in the mind, than by supposing it to depend, on the difference in the momenta of these particles, differently affecting the nerves & sentient principle; or in other words, that the idea of red is formed, by particles of light of a certain magnitude, impinging on the nerves with a certain momentum; the idea of green, by particles of a different magnitude from the former, striking the ~~same~~ same with a different momentum, & so of all other colors. If this be true, & if it be also true that the mind sees objects clearly only when rays of light coming from every point of the object, strike on some nervous fibril, which is only a consequence of the former, the choroides cannot be the immediate organ of vision, unless we suppose it to be entirely made up of nerves, for the least point that we can conceive, being destitute of a nerve, the ray of light falling on that, will not be communicated to the mind. But the choroides is so far from being made up of nerves, that, if we may depend on the authorities of Monro, Haller, and Winslow, its only furnished by a very

small branch from the fifth, & a little twig from a branch of the third pair of nerves, which are principally distributed on its exterior surface next the sclerotica.

Beside, the choroides, which is much less tender & delicate than the retina, cannot answer the end so well, as is evident from hence viz: that the particles of light being extremely minute, & thence acting with a very small impulse, it was absolutely necessary, that the membrane on which they impinge, should, by its fineness, & the delicacy of its structure, be susceptible of different vibrations, according to the various degrees of their action, & consequently, be extremely thin & tender; otherwise no sensation could have been produced, much less could any comparison between the sensations have been distinguished; all our Ideas acquired by sight depending (as I said before) upon the comparison which the mind forms, from the different impulses of the rays upon the retina, & not from any reflection drawn from the picture painted upon it.

If the choroides is the immediate organ of vision, I ask of what use is the optic nerve since the choroides is not connected with it? Does it only serve to furnish an Epidermis to that membrane? Or does it not rather serve to ~~furnish~~ convey the impressions made on the retina to the sensorium commune, according

to the opinion of all physicians & philosophers, in all ages, a very few excepted.

Nor is the retina so transparent as readily to transmit the rays of light, but is demiopake; constantly of the same color and appearance in all animals, very smooth, delicate, & excellently well adapted for recieving the impressions of all colors; whereas the choroides is a rough vascular membrane, of different colors in different animals, & from its being a colored membrane is unfit for recieving any colored rays but those of its own.

St. Ives further argues, for the choroides being the immediate organ of vision, from the motion of the Iris, which he says is a continuation of the choroides, & furnished with nerves from the same branch; therefore its contraction & dilatation in certain circumstances, must be owing to the stronger or weaker impression of the rays of light on the choroides. Not to enter into any nice disquisition, with regard to the sympathy & mutual action of various parts of the body, no way connected; we would only ask, whether the hand, being involuntarily carried to the forehead or other part of the body of a person in sleep, when bit by a fly, is owing to any continuity of those parts, or their being furnished with nerves from the same branch? but this notion is entirely refuted by what has been observed in people who have had

a confirmed gutta serena in one eye, for if the sound eye be covered, the iris of the diseased one remains immoveable in every degree of light, but if the sound eye is exposed to a strong light, the pupil of the other, which shewed no motion before, will plainly be seen to contract. This contraction can only arise from the sympathy between the two pupils, & not from the choroides being affected by the light

But what is the strongest argument of all that the retina is the immediate organ of vision is, that the internal surface of the choroides, being every where covered with a black pigment, of a considerable thickness, especially in some animals, as those of the fish kind, in which it has the appearance of a membrane & thence called Tunica nigra by some, the rays of light can of consequence have no access to that coat, as black is allowed to absorb & inviscate the particles of light so as entirely to obstruct their passage, and the design of this pigment is undoubtedly to stifle those rays of light, that by accident, are caused to project any farther than the retina, & to render the representation of the object, on the retina, more distinct & vivid, in the same manner as the black bordering of the wall, on which the image is received in a camera obscura, serves to stifle the collateral rays which come from on each side the object, & not suffer them to disturb the picture by reflection.

These considerations, I think, are sufficient to convince us, that the retina, is the immediate organ of vision. Many other arguments might be adduced to confirm the same, but as I have already far exceeded the bounds I first intended, & have perhaps tired your patience, I decline saying any thing more on the subject at present.

I cannot however conclude this letter, without returning you my sincere & hearty thanks, for the frequent instances of your kindness towards me, & expressing my great satisfaction, of the several courses of your anatomical & chirurgical demonstrations, I have had the honor of attending, for some seasons past — may you continue to meet with that encouragement your truly useful lectures justly deserve, & assure yourself, my small endeavors shall never be wanting, in promoting the interest of one, to whom I shall ever be ready to own, I am indebted, for the greatest part of the little knowledge I have, in some of the principal branches of medical science. I wish I may have improved so well under your judicious tuition, as to justly deserve the name of having been your pupil, & to merit your future notice & patronism.

I hope you'll put a favorable construction on what I have here advanced, & excuse the unwarranted freedom I have taken.

I am Sr. your very hble. Servant Jonathn. Elmer

January 1767 –

Physiological Fragment

No subject in physiology is of more importance & ought to be better understood by every votary of the medical art than the doctrine of respiration; as well because of its being absolutely essential to life, as from the many very dangerous diseases to which the respiratory organs are constantly obnoxious.

But, however necessary a compleat knowledge of this complex vital action is to the physician, it can never be obtained till some essential controverted points relating thereto are better ascertained & cleared up, more particularly that query whether air is contained within the cavity of the thorax between the lungs & pleura, a subject that was much agitated among the members of the royal society in the last century & still continues a matter of dispute in the schools of physic.

My design at present is an humble attempt to prove the negative that there is no air contained within the cavity of the thorax between the lungs & pleura in a sound state: and this I shall ~~attempt~~ endeavor to effect as well by arguments drawn from actual experiments, as by morbid appearances from the dissection of diseased subjects, & by demonstrating the impossibility of respiration being performed should we admit of air being contained in that cavity.

The celebrated Dr. Boerhaave tells us that by cautiously removing the integuments & intercostal muscles so as to lay the pleura bare, taking care not to cut that membrane, we may plainly see with the naked eye the lungs in contact with the thin pellucid pleura both in inspiration & expiration*. This experiment has not only been made by Boerhaave

but by many others of the greatest authority particularly the immortal Ruysch a man ever averse to hypothesis, as well as by the great Albinus, Van Swieten, De Haen, Haller & Monro all of whom assert, that the lungs are always in close contact with the pleura without any vacuity or intermediate space for containing air; nay, even the favorers of the contrary opinion, particularly the ~~ingenious~~ indefatigable Dr. Hales & Dr. Hoadley assure us that they have made the same experiment on living dogs & always found the chest compleatly filled with the lungs on every side. What wonder then, that a man of so much candor & sagacity as Dr. Hales should not be convinced of his error by so clear an experiment when made by himself, since it is impossible that the lungs can ever be contiguous to the pleura if air is contained between them tho' in ever so small a quantity. But our wonder will perhaps cease when we consider the amazing force of prepossession which often so blinds its ~~favorites~~ votaries as to render them insensible to the strongest conviction.

Further if a perforation be made thro' the pleura, the air suddenly rushes in through the opening, colapses the lungs & stops respiration on that side on which the incision is made, so that by making a perforation on both sides the thorax thro' the pleura both lobes of the lungs suddenly colapses & the animal soon expires. Of this kind was the famous experiment of Dr. Hooke made on a live dog before the royal Society & since repeated by Boerhaave, Albinus, Haller Monro & others with the same event. In a dead body also where the integuments & intercostal muscles are carefully taken off the lungs are seen contiguous to the

pleura, but upon making an incision through the pleura they suddenly colapse, leaving a large cavity between them & the pleura. Now if there was air naturally contained between the lungs & pleura why should the lungs colapse so suddenly upon the admission of air. It cannot be owing to the smallness of the quantity of air contained there, for it is well known to all philosophers that the elasticity of the smallest portion of air is equal to the weight of the whole atmosphere, and in dead bodies at least, no cause can be assigned why the air contained within the thorax (if any there be) should not be of the same density with the surround-ing atmosphere. & if it is, of consequence the making a communication between the internal & external air as they are called, by an incision thro' the pleura would make no alteration in the state of the lungs themselves.

It is also well known to all surgeons that in the operation for an empyema when a perforation is made into the cavity of the thorax to discharge a collection of matter of any kind, if air be confined in the same by the dressings, a difficulty of breathing & other bad symptoms succeed; and Haller tells us that admitting air between the lungs & pleura has been known to stop res-piration & even cause death which it is obvious to every one could never be the case if air was contained there in a natural healthy state

But the experiment of opening the thorax without hurting the lungs of living animals, while the trunks of their bodies are immersed in water thro' which no bubbles of air rise after the perforation, as proposed by the ingenious Lieberkuhn & executed by the illustrious Haller & several others is a still more decisive proof that air is not contained between the pleura & lungs & seems to put the matter beyond doubt for the smallest partl

of air which otherwise might pass unnoticed would discover itself rising in the form of a bubble to the surface of the water in this experiment

Innumerable instances are recorded in the history of physic as well ancient as modern of the adhesion of the lungs to the pleura in every part without any bad effects following it or any injury to the action of respiration. This adhesion of the lungs to the pleura is so frequent that there is scarce a person who has ever had any inflammatory disorder of the Breast but what has more or less of it succeeded. If then respiration can be regularly performed when there is an adhesion of the lungs to the pleura & of consequence no room for any air being contain'd there, or at least for its any way assisting respiration, and if from the preceding experiments the opinion of the existence of air in the pleura is rendered very dubious if not entirely refuted, what more is necessary to convince unbiased minds of the truth of what we had all along been establishing.

But if what has already been said should not be sufficient to convince those who are tenacious of a favorite doctrine we shall attempt to demonstrate the impossibility of respiration being performed should the existence of air be allowed in the cavity of the Thorax.

Of the female Pelvis

The pelvis begins at a line drawn from the top of the os Sacrum to the top of the conjunction of the ossa pubis & is made up of the ossa innomenata & sacrum with its appendage the os coccygis

The figure of the pelvis is nearest that of an ellipsis, the greater diameter that which goes transversely, the lesser that which passes from before backwards to the os sacrum, & the least of all that which descends in a perpendicular direction.

The female pelvis differs from that of the male both in its figure and capacity.(a)

Its more cappacious as being made to contain more & larger viscera, for the prostatæ & vesiculæ seminales in men are small when compared with the uterus and vagina. There is a necessity also for the female pelvis' being ample that the uterus may have room to enlarge itself during gestation as well as at the same time to allow space for the bladder & accumulation of feces in the rectum. The ossa illia are therefore placed at a greater distance from each other are smaller, thinner, more concave & form a larger arch in ascending from the Sacrum to the pubis. The acetabula are also at a greater distance from each other making the pelvis broader transversely.

(a) Halleri Elementa physiologiæ tom: 7.

Of the female Pelvis

Hence the thighs are at a greater distance from each other in which parts women are more plump and brawny than men

In a well formed female sceleton the breadth across the shoulders is about 26½ inches, from the superior edge of one ilium to that of the other 32½; on the contrary in a male sceleton across the shoulders is 31½ inches, of the ilia about 26. that is the pelvis of a female to that of a male is in the ratio of 1053 to 813 or as 5 to 4 nearly.(b)

The distance of the thighs from each other in females to that of males is in the ratio of about 35 to 34.

The distance from the brim of one ~~f~~ ilium to the other is about 5½ inches,(c) from the symphysis of the ossa pubis to the sacrum 4½(d) inches, from ischium to ischium 5 inches, & from the end of the coccygis to the pubis (when pressed back by the child's head) 5 inches but less in a natural state. The depth of the pelvis from the top of the sacrum to the termination of the coccygis in a straight line is 5½ inches, from the top to the bottom of the pubis is but 2 inches which difference of depth between

(b) Cowper expl: tab: 2

(c) Smellie, Titsing diana p 475. Burton. Roederer. (d) Titsing. Roederer. Burton says 4¼

Of the female Pelvis

the sacrum and pubis compensates for the turning in of the os coccygis towards the pubis, & hence it is that altho' at the brim of the pelvis the largest diameter is from side to side, yet at the bottom of the pelvis the largest diameter is from the pubis to the os coccygis provided the coccygis be bent backwards by the child's head.*

These are the common dimensions of a well formed pelvis, but we sometimes find it very much distorted so as not to transmit the child's head; which distortions may happen several ways, thus we sometimes see the sacrum pressed forward so as to render the distance between it & the pubis not above 2 or 3 inches. The pubis is sometimes pushed in so to be even convex internally, the tuberosities of the ischia are sometimes squeezed within 2 or 3 inches of each other, but the most common distortion happen from the rickets when the last lumbal & first sacral vertebræ protrude forward.

A line let fall perpendicularly from the umbilicus thro' the center of the pelvis will pass through the os Tincæ when the uterus is unimpregnated but when the uterus is distended in gestation the

* The accurate Albinus describes the pelvis thus "Deinde cum coccyge pelvem faciunt cavum magnum, seu orbiculatum factum a posteriore parte, ab osse sacro & coccyge; a lateribus ab ischiis; a priore parte ab ossibus pubis." De Ossibus p 161

line must fall from half way between the umbilicus & scrobiculus Cordis. It is of use to remember this in Touching.

It is a dispute among authors whether the ossa pubis ever separate from one another in the time of parturition. Dr Hunter says he never found that to be the case, Dr McKenzie thinks it may happen & Mr Watson has a preparation in which the ossa pubis have given way more than half an inch.

This pelvis is divided by the peritoneum as it were by a septum into two distinct parts. In the anterior of which the bladder is situated, in the posterior larger one is contained the rectum. The uterus itself is placed in the middle of this septum making the appearance, especially in virgins, only of an increased thickness of it in that part, for the peritoneum passing on from the muscles of the abdomen & os Pubis ascends to the top of the bladder & being reflected over its fundus again descends behind it almost to its neck, then again being reflected upwards it ascends on the anterior side of the uterus till it has attained its superior convexity, then it is reflected over its fundus & doubled down on its posterior side parallel & nearly in contact with the former in the manner of a fold descending almost as low

as the vagina thus forming a partition in the pelvis by its duplicature, between the two folds or lamina of which cellular substance is interposed that may be inflated.

This duplicature of the peritoneum, between the anterior & posterior folds of which the uterus is seated with the fallopian tubes & ovaria, forms the external coat of the uterus; and its folds that are broadly expanded to the sides of the pelvis commonly go by the name of ligamenta lata.[a]

(a) Halleri Physiolog.

Menstruation

The menses is a periodical discharge of red blood from the uterus happening generally about once a month.

This discharge in our climate, for the most part, commences at about the 13 or 14th years of a woman's age, and terminates at 45 or 50: but in warmer climates they begin and end much sooner. In the east-Indies women sometimes have their menses at 9 years old & bear children at ten. In cold climates they dont make their appearance till late & continue to a pretty advanced age.

The return as well as the duration of each period is very inconstant; some having them every 2 or 3 weeks, others again only every 5, 6 or 7 weeks, tho' in general they make their appear:ance about every 4 weeks. The flux continues in some for 5 or 6 days whereas in common it does not flow longer than 3 days.

The quantity of blood discharged at every period is also very variable owing to the difference of age, constitution, and way of living. At the first eruption the quantity is small but in:creases till the woman has arived at her prime. Women who

live an high, idle sedentary life have them in great quantity, while those who live sparingly & use much exercise menstruate much less copiously; Some say the quantity discharged at each menstruation is 10, 12 and even 20 ounces in common. but Dr. Shippen is of opinion that seldom more than six ounces is lost at a time.

Physiologists are much divided as to the cause of menstruation. Some attribute it to the influence of the moon, but if this was the case all women would menstruate at the same time, whereas we find not a day exempt from this discharge or on which some have not this evacuation.

Others suppose it to be owing to a ferment, but this cant be the case as the blood is perfectly neutral & therefore can afford no materials for such a fermentation.

But others with a much greater degree of probability impute the cause of this discharge to a plethora, but whether this plethora is universal or only partial of the

uterine vessels is a dispute. Friend & most writers since him have adopted the opinion of an universal plethora and indeed their not appearing before the women arrive at their acme or nearly, their ceasing naturally in advanced age, the symptoms that preceed the eruptions, & gravid women & those that give suck being generally destitute of them, seem to be so many proofs that this is the true cause of the menstrual evacuation. Dr. Simson however has offered many objections to this doctrine and endeavors to prove that it is owing to a partial plethora of the uterine vessels only, & brings many cogent arguments to support his opinion. If these two hypotheses were compromised, or a medium struck at between them, it seems probable that we should arrive still nearer the truth of the matter than either of them separately; for, that there is a general plethora in some measure of the whole system from an accumulation of a superfluous quantity of fluids, is, I think sufficiently evinced both from reason and

daily observation; but at the same time from the struc-
-ture of the blood vessels, & the fabric and situation of the
uterus, the redundant blood must by the laws of hydraulics
be determined in a much greater quantity to that viscus than
to any other part of the body: consequently, though there will
in some degree be an universal plethora, yet the vessels of
the uterus will in a special manner be greatly surcharged
with blood at certain times when it abounds in the
greatest quantity in the system.

Astruc supposes a distention of what he calls venous
appendices or in other words, he admits of a partial plethora as the
cause of the menses, but then he supposes this takes place
only in these appendages which he says open into the cavity
of the uterus. This particular fabric of the uterine vessels
rests principally on the credit of this author as few anatomists
beside have ever been so happy as to discover them: therefore
till that matter is better ascertained this hypothesis must re-
-main dubious.

Menstruation

De Gorter imagines that there is a particular motion excited at certain times in the vessels of the uterus which is the cause of this evacuation, but this opinion seems hardly consonant with sound theory or experience.

It has been disputed whether the menstrual blood comes from the vessels of the uterus or vagina, but it is now generally agreed from the former & is even proved by occular tes:timony in prolapsus uteri when the blood is evidently seen to distill through the os Tincæ.

If it should be asked why men have not this periodical discharge? we may answer that men who are formed only for strength & action make a greater consumption & discharge of their fluids by perspiration & other excretions, whereas women who lead a more inactive sedentary life, who are destin'd for bearing and nourishing their tender offspring, & whose vessels are more lax and capacious; have less excretions and a greater redund:ance of fluids. and we see that those men who live in a state of inaction have periodical evacuations either by stool, urine, perspi:ration or hemorrhoids. Dr. McKinsie tells of a Gentleman who had a periodial discharge from the Thumb.

Menstruation

The menses seem designed by nature to facilitate concep=
=tion, for the nourishment of the foetus while in utero & after
parturition to supply matter for the formation of milk; hence
women that do not menstruate are for the most part barren; &
women who menstruate while they give suck are mostly bad nurses.

Obstructio mensium

*The menses may be obstructed from various causes. The general causes are owing either to an affection of the vessels or fluids. The vessels may cause the obstruction either by being too rigid to give way to the impulsive force of the blood or spasmodically constricted. The blood itself may prove the cause of obstructions either from its too great tenacity, or abounding in so great a quantity that the solids are not capable of propelling it on with a force sufficient to dilate the small uterine vessels so as to find an exit; or it may be owing to inanition or the want of a superfluous quantity of blood as happens generally to women recovering from a long fit of sickness, in this case the menses mostly appear as soon as a sufficient quantity of blood is accumulated to require a discharge.

The symptoms that attend an obstruction of the menses are different in different women in some languor debility & paleness of the countenance succeed; in others flying pains, fulness and

* When women have their menstrual discharges at longer intervals, or less copiously than usual, they are said to be obstructed: but suppressed if no signs thereof appear at the expected periods. Shaw's practice v: 2

redness of the face which contrary effects may readily be ex:
:plained as the former is owing to a laxity of the vessels and
a weakness of the aimapoietic organs by which means the
blood is not properly elaborated & the weak vessels are incapa:
:ble of propelling through the small cutaneous vessels hence
the pallid countenance &c: but the latter depends on a quite
contrary cause viz.t very strong elastic vessels whereby the blood
is rendered dense & florid & is forced with great impetus into
the small capillary arteries.

The cure is as various as the cause. If it arises from a too great rigidity of the uterine vessels the cure must be effected by relaxing medicines, emollients, warm pediluvia and semicupia, the vapor of warm water receded into the vagina &c: If from a spasm which is frequently the case when they are obstructed by taking cold suddenly, anodynes antispasmodics and mild diaphoretics generally effect a cure. In a lentor of the fluids or a plethora venesection is required which if performed a day or two before the expected time

time of their appearance especially in the latter case rarely fails of success. Purging medicines are sometimes serviceable, they should be mild at first, but afterwards more stimulating ones may be used. Emmenagogues may sometimes tho' not always be made use of as the ferulaceous gums, castor, steel &c: but where the obstruction depends on a want of a sufficient quantity of blood to require it as in women recovering from long sickness emmenagogues are by no means to be administred; in this case a restorative easily digested diet, gentle exercise, Tincture of the bark, bitters & other corroborants to which may be added after some time a little steel; prove the most efficacious.

Dr. Shippen recommends equal parts of Sal martis and pill rufi as a good emmenagogue & likewise the pulvis e myrrho compositus of the London Pharmacopoeia; but says that he has seen better effects from mercury than any thing else.

Chloroses

This is an affection to which young girls who have just arrived to the age of puberty are chiefly subject: and in fact is nothing more than a cachectic habit of body arising from an inveterate obstruction of the catamenia or rather a conjunction of all the symptoms that succeed the suppression of this necessary and useful evacuation continued for a long time.*

It is always attended with a laxity of the solids, a pituitous viscidity of the fluids, languid circulation & oedematous swellings of the extremities, paleness of the countenance and frequently a vitiated or depraved appetite

The cure therefore depends principally on strengthning the system, attenuating the juices, increasing the circulation and promoting the menstrual evacuation

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* Quem in genere cacheciam dicunt morbum, is in virginibus, quæ nondum menses experta sunt, aut si ipsi inordinati & parciores fluunt, chlorosis denominatur, itemque morbus virgineus & febris alba; de qua maxime agit Hippocrates lib: de virginum morbis, nihilque aliud, quam cachexiæ species est, iisdem, quibus cachexia, signis sese prodens. Hoffman Syst: med: rational tom: IV c XIII

Profluvium nimium mensium

Women are said to have an immoderate discharge of the menses when they continue for a longer time than usual at each visitation or return at shorter intervals.

It may be owing to too great a weakness of the uterine vessels giving way too easily to the impulse of the blood. to a pethora or too great tenuity of the blood readily finding an exit through the small serous vessels of the uterus; or to a malconformation of that viscus.

The symptoms that attend a profluvium nimium mensium are weakness, paleness, coldness of the extremities and other symptoms proceeding from inanition

Women are much less subject to a profusion than an obstruction of the menses, but when it does happen it generally proves more difficult to cure as most frequently seizing those of a very tender delicate system easily affected by slight causes.

The cure is to be attempted by bleeding in the arm, friction of the superior parts & other methods that cause a revulsion, giving internally balsamics, diaphoretics, & incrassants especially in a too great tenuity of the blood: if great weakness attends a good

Profluvium nimium mensium

nutritive diet astringents, corroberants, gentle exercise and a free air, are necessary.

Hoffman recommends warm fomentations to the superior extremities which he says by relaxing them cause a greater derivation of the fluids to them and consequently a revulsion from the uterus & inferior parts but these are found not only to be useless but frequently proves hurtful by rarifying the blood & thereby increasing the fulness & distention of the vessels.

Astringent topical applications often become serviceable as cloaths folded dipted in cold vinegar or some astringent decoction cold and applyed to the loins and pudenda and frequently renewed. the cold bath cautiously used especially after proper evacuations

This often threatens abortion at about the end of the third or fourth month of gestation: in this case perfect rest, lying in an horizontal posture, venesection in the arm and walking only on a plane or level are the surest preventatives.

Fluor albus

This is a discharge of matter of various appearances some=
=times white, sometimes greenish, yellowish & various other colors.

Astruc and Pyersco say that this matter is discharged from small glands seated in the uterus which the former calls colatura lactea, Smellie is also of this opinion, but the best modern anatomists admit of no such glands & therefore think that it is discharged by the exhaling vessels of the uterus and perhaps of the vagina also.

Women of all ages from children of 5 or 6 years old to those in the most advanced stage of life are subject to this dis=
=charge but most commonly those who have born children. And depends either on a universal fault of the system or a local weakness and laxity of the parts of the uterus in wh. its seated.

It may be caused by a great plethora, a lax or cachectic habit of body, a profuse discharge of the menses or a weakness of the parts from frequent parturition or other causes; & most frequently happens in low wet countries where the system is relaxed and the perspiration checked, thus in Holland two women out of three generally have the Fluor albus.

Fluor albus

The symptoms that generally attend are pain in the back and uterine region, languor, weakness, great paleness, depraved appetite

This discharge differs from that of a virulent gonorrhoea in stopping during the menstrual flux whereas in a gonorrhoea the discharge is incessant; it is also less frequently attended with a scalding tho' that symptom happens sometimes in this disease as well as is sometimes absent in a gonorrhoea therefore that cannot be looked upon as a sure distinction; the nature of the discharged matter is different, in the fluor albus it is of a glary appearance & when put upon linnen does not sink into it in the manner of the other.

It very often proves the cause of sterility and when of long standing is generally very difficult & tedious to cure.

The cure must be begun by bleeding if judged necessary emetics, & cathartics to cleanse the primæ viæ & make way for other medicines, then strengthning, corroborating medicines must be exhibited with Steel, bitters, exercise, a free open air, easy digested diet, decoction of the bark, but of all others I have seen the best effects from G: olibanum & the chalybeat waters. Externally decoction of oak bark with alum or starch appl.d cold, cold vinegar & the cold bath are very good.

Morbi gravidarum

Women during gestation are frequently subject to symptoms very troublesome and alarming so as often to demand the skilful physician's friendly assistance.

The diseases of gravid women may in general be reconed of three kinds or periods, each period including the space of three months.

The Symptoms that most commonly during the first period or early months of gestation prove more or less troublesome are, nausea, vomiting, loss of appetite, pain in the stomach, faintings, lassitude, pain in the head and other symptoms consequent on a suppression of the catamenia & of plethora from the yet small & tender fœtus not consuming all the superfluous blood made by the mother's amaipoetic organs.

Boerhaave seems to be the first who considered any of these symptoms as proceeding from the stimulus of the male semen. Some of them undoubtedly proceed from the enlargement of the uterus & its sympathy with the stomach & other parts, hence the frequent nausea and vomitings especially in the morning, faintings palpitations of the heart &c.

Morbi gravidarum

These symptoms in the second period mostly give way to others depending principally on the gravid uterus w:ch are besides some of the preceeding colic pains, shortness of breath, cough, pain in the reins, groins, breasts, teeth, a difficulty of making water & a frequent desire of doing it, owing to the pressure of the uterus upon the bladder; a frequent inclination to discharge the contents of the rectum, hemorrhoids, varices of the veins of the legs, swelling of the legs thighs & pudenda, floodings, abortion, convulsions &c.

Bleeding & regulating the non-naturals generally relieve many of the symptoms above enumerated. As for vomiting in the morning it is as common as a big belly owing to the distended uterus pressing upon the nerves & adjacent viscera which are supplyed with nerves from the same pair as the uterus, hence the stomach is affected by sympathy so as to excite vomiting &c therefore if it continues obstinate after venesection, the use of

gentle laxatives &c: it will be best to desist giving medicines. All drastic purges are quite improper. Sudorifics seldom ordered; Emetics sometimes tho' not without danger of causing abortion. Dr. Hill's Lady was a very delicate person & subject to a chlorosis before marriage, she often took vomits, & when pregnant was very much troubled with a vomiting so as to threaten abortion. In consultation it was agreed to give a small dose of Ipecacuanha (viz: gr. viij) which removed it for sometime; at length it returned, and the emetic was repeated 13 times during her pregnancy, & at her full time she was delivered of a fine child. It is usual for women to bleed at the expected periods in the early months which in plethoric robust women may be of service tho' Dr. Shippen thinks if there are no very evident signs of plethora or symptoms that demand it its best to let it alone; but in lax delicate constitutions & those who have had many children bleed sparingly. Some advise bleeding about two months after conception. others not till half gone, the first seems best. If a gravid woman is costive which is frequently the case

Morbi gravidarum

lenitives or clysters should be given but no drastic purges. About the sixth or seventh month of gestation women are some=times siezed with pains like true labor pains which are by no means to be encouraged.

A woman with child should not be kept tight in her cloths, she ought to throw by her whalebone stays, and if she is anxious to preserve her shape wear a bodice or a quilted waistcote in its stead. moderate exercise rather beneficial than otherwise to gravid women.

Signs of Conception & pregnancy.

Nothing is more difficult than to determine with cer=tainty whether a woman has conceived or not in the early stages of pregnancy: we ought therefore always to be very cautious of pronouncing peremptorily, especially when the person's character is like to suffer, for reputation a very tender valuable thing too important to be trifled with. In most cases it is best to suspend our judgment & tell the patient to rest satisfied & time will infallibly discover whether she is pregnant or not

Women that have had many children know that they have concieved, if immediately after emission they feel a tremor & fluttering wch is look'd upon as an infallible sign of conception by them. Other signs are, she feels a slight pain of the navell, the region of the womb appears depressed, she is more dispirited & fatigued with the act than usual & has no desire to repeat it.

The signs which appear some days after the act are many. The woman feels dull heavy & morose, her appetite becomes impaired, longings succeed, her eyes look livid, hollow & languishing, her breasts increase & grow hard and painfull; her nipples grow bigger & harder, the circle round them broader & browner; she has reachings to vomit especially in the morning & her menses are suppress'd. — But these signs are far from being infallible ones.

6

Signs of Conception & pregnancy

The signs of pregnancy are the same with those of conception; but as a woman grows bigger other more certain signs appear as increase of pain & swelling of the breasts, impaired & depraved appetite, a total suppression of the menses without any manifest cause, her belly growing gradually prominent over the uterine region, & that is the surest sign of all feeling the stirring of the child.

To understand the different times of gestation, or how far a woman has gone with child aright, we must carefully attend to the account she gives of herself, & of the circumstances she was in when with child before; if her courses stopt im=mediately upon her conceiving, if her belly is big, & if she can tell when she first felt the foetus stir you may form a judgment about the time she has to go.

Outlines of a general History of Physic

In tracing the Outlines of the History of Physic or medicine we shall take notice

1 Of the State of Physic from the earliest ages to the time of Hippocrates
2 Of the state of Physic after Hippocrates amongst the Greeks & Romans
3 Of the State of Physic amongst the Arabians
4 Of the State of Physic from the revival of Learning to the time of D.r Harvey
5 From the time of D.r Harvey to the present time

Apollo & Esculapius said to be the inventors of Physic. — Esculapius lived about 700 years before Hippocrates — Podalirius & Machaon his Sons were Physicians at the siege of Troy.

The Egyptians & Chaldeans appear to have had some knowledge of Physic, especially the Egyptians. Mercurius, Serapion, Herophilus, & Erasistratus, were Egyptian physicians.

Pythagoras, Empedocles, Heraclitus, Democritus & others, were Greek physicians before Hippocrates. Thesalus, Diocles Praxagoras & Aretaeus after him.

Hippocrates is stiled the Father of Physic — Is the first whose writings have been handed down to us — he was born A.M. 3512 about 450 before Christ — inclined to the Pythagorean philosophy of odd numbers —

× Commentators. Galen. Holler. Valesius. Duretus. De Gorter.

× Empyrici. Dogmatici. Methodici. Pneumatici. Episynthetici. Eclectici.

Some account of his writings & Commentators upon him ✗
The Corpuscular philosophy of Epicurus introduced into physic by Asclepiades. Different opinions in philosophy & physic amongst the ancient Greeks occasioned different sects of physicians amongst the Greeks & Latins.* —

Aretaeus Capadoc the best writer next to Hippocrates — Aristotle the author of the Peripatetic Philosophy was born 384 years before Christ.

Themison, Soranus, Celsus, Musa, Dioscorides, Galen & Caelius Aurelianus were Latin physicians

Celsus the best — called the Latin Hippocrates — lived in the reign of Augustus & is a good writer.

Galen was born A.D. 131 — His theory of Physic is founded on the Peripatetic philosophy. was a great physician & voluminous writer. —

Oribasius, Aetius, Paulus Egineta & Trallian were modern Greeks.

About the 3.d & 4.th centuries learning cultivated chiefly in the Eastern Empire & Egypt. — The Ptolemies in Egypt great encouragers of Learning — and Alexandria became famous for the study of physic This City was taken by the Saracens in 640 & the Greek physic was thereby introduced amongst the Arabians. These people extending their Conquests in Asia & Africa at length got footing in Spain & Italy by w.ch means the Arabian physic was introduced into Europe —

Rhazes, Haly Abbas, Avicenna, Avenzoar & Averrhoes Arabian physicians. — In 802 a physical College was founded at Salernum & afterwards other medical Schools, in all which the Arabian physic was chiefly taught, until the taking of Constantinople by the Turks in 1452, when many learned Greeks retiring into Italy, carried the original Greek copies with them, which were afterwards studied in Europe instead of the Arabian translations & Commentaries.

The art of printing being invented about the year 1466 learning which from the distruction of the Roman Empire had declined in Europe now began to revive — Physic began to improve — Linacre, Caius, Vesalius, Eustachius, Fallopius, Malpighi Bartholine Prosper Alpinus, Lewenhoeck before Harvey — Paracelsus & Van Helmont authors of whimsical Theories in physic — Wepfer & Stahl in some measure their successors. —

Dr. Harvey discovered the Circulation of the Blood & Sanctorius insensible perspiration which introduced a new Era in physic. 1628.

Physicians & improvements in physic since the discovery of the Circulation

The reformation in religion begun by Luther and in philosophy by Lord Bacon paved the way for improving every branch of science & amongst the rest physic

The peripatetic Philosophy prevailed near 1000 years to the time of L. Bacon — until the time of Paracelsus & van Helmont the Doctrines of Galen mostly adopted in Physic. The chemical theory introduced by these men & soon after the Cartesian Philosophy by Des Cartes which prevailed some time

With the new Philosophy the mechanical Theory of physic was introduced to which have now succeeded the Spasmodic system of Dr. Cullen & the asthenic System of Dr. Brown.

Boerhaave's the first complete System of physic was published about 1728.

Dr. Boerhaave's Academical Lectures on the medical Institutes or Theory of physic with Dr. Haller's notes in the English translation is in 6 vol. 8vo.

On the practice of physic his Aphorisms concerning the knowledge & cure of Diseases, with van Swieten's Commentaries in 18 vol. 8vo.

Dr. Haller has greatly improved physiology since Boerhaave's time. He was the first who clearly demonstrated the difference between irritability and sensibility. That irritability resides in the muscular fibres & sensibility in the nerves. He likewise supposes there is a vis insita in the muscular fibres distinct from the vis nervea; but this is doubted by others

His physiological works are. 1st Primæ Lineæ physiologiæ in 1 vol. To some late editions of it there are notes by Dr. Wrisberg. — 2o Elementa physiologie in 8 vol. 4to. This has not been translated into english.

An Essay on the Blood

Translated from Dr. Martin Butt's Inaugural Thesis published at

Edinburgh

By

Jonathan Elmer M.D.

The following Essay on the nature & qualities of the Blood, was, at the time of its first publication, considered as the best performance of the kind then known. At Dr. Morgan's request I translated it for him & it was delivered by him in the course of his Lectures on the Theory and practice of physic —

The following copy was transcribed from my translation by James Armstrong a student of physic at that time with Dr. Morgan

Jonathn. Elmer

N.o 1

Of the Blood

From the appearances of blood taken from the veins, physicians often form a judgement of its nature in diseases; & its greatly to be wished that this could be done with certainty. But these phenomena ~~become~~ become so different, from so many causes which happen to the blood let from a vein, that inferences drawn from thence are very uncertain, unless we accurately attend to all the particulars that may produce a change therein, & at the same time clearly discern their effects.

In this inquisition, most of the experiments were made on the venal blood of the human body, & from thence conclusions drawn concerning the nature of the same. Nevertheless, I dare not affirm, that there is no difference between the venal & arterial blood in animals. I was induced to make

my experiments on venal blood, not only because I could not be supply'd with a sufficient quantity of arterial blood on which I could make them, but also, because it will hereafter be considered, how much the blood of different vessels differs from each other; & I hope the experiments made on the venal blood will be sufficient for us to conclude that from them we may justly establish ye general nature of the blood.

Section 1

Of the spontaneous separation of the blood into different parts.

When blood let from a vein is received into a proper vessel, as in the common method of bleeding, & is exposed to the open air of a moderate temperature, the following phenomena arise.

While the blood remains warm a conspicuous

vapor arises from thence, & being examined after some time, is always found to have lost much of its weight by exhaling.

When the blood grows cold it looses its fluidity, & appears to concrete into a red uniform soft & & gelatinous mass.

After some time the concreted mass is loosened ~~itself~~ from the sides of the vessel, leaving in the intermediate space an aqueous fluid which surrounds the red concreted mass. This Mass, contracting & lessening itself, gradually occupies the middle of the vessel, while the quantity of surrounding fluid increases. This is the most common & well known spontaneous separation of the blood. The fluid part is called serum: the concreted Mass which we

shall hereafter call Crassamentum is most commonly but with less propriety called Cruor.

Thus far the spontaneous separation of the blood commonly proceeds; but each of these separate masses, however homogeneous they appear, are by no means so, but are made up of different parts. For if the mass of Crassamentum is laid upon a linnen cloth, so suspended that water may pass through it, & a quantity of water poured on the Crassamentum, it will wash out with it, a colored matter from the same, & carry it through the linnen; & if this affusion be frequently repeated, the red color will be entirely washed from the crassamentum, leaving behind a white firm & tenacious Mass; this appears to be that matter, which the celebrated Malpighius & his followers, call the

fibrous part of the blood, & which lately, if I mistake not, is called, with sufficient propriety, coagulable lymph, by the illustrious Senac. This appears to me to be the very same matter which is thrown out on the surface of ye crassamentum in diseases, & sometimes in health, and is commonly called by the name of inflamatory crust. The Crassamentum therefore consists of a coagulable lymph & red part.

The serum also, as will hereafter be shewn, is composed of different parts; (vizt:) of coagulable lymph, & an aqueous humor, which contains various saline matters dissolved in it.

From the preceding analysis of the blood it will sufficiently appear, that the spontaneous separation of the blood, which commonly happens, may be various in various circumstances: while

more or less of the *serum* is retained in the pores of the *Crassamentum*, or perhaps more or less of the *coagulable lymph* is washed out together with the *serum*.

Therefore I have strictly enquired into those things that may cause a variation in ye spontaneous separation of the blood, & from thence into the different appearances of the same when drawn from a vein; & I judge all these may be referred to one or other of these three heads, 1st To the action of the Air. 2dly To the different degrees of heat and cold. & 3dly to motion & rest.

Chapter 1st Of the effects of Air

The action of the air is necessary to discharge the *halitus* of the blood, as well as for the exhaling of most other vapors. Hence in the experiment of

the celebrated Eller, a small quantity of blood kept in vacuo for fifteen years lost none of its weight that could be perceived.

Not only does nothing exhale from the blood in vacuo, but also if the air touches only a small part of it, the same thing happens. Hence blood received into a narrow mouthed vessel, filled to the top, was found after a long time, to have lost but a very small part of its weight.

Nor is it sufficient in extricating the ~~particles~~ halitus of the blood, that the air touches a sufficiently large surface of the blood unless it is frequently changed. That I might determine this more exactly, I took two vessels of the same shape & size, in each of these I received from the same vein, as nearly an equal quantity of

of blood as I could determine, i.e. about four ounces in each. The mouth of the vessel that received the first portion of blood, which was filled to within half a finger's breadth of the top, was very accurately stopt, but the other one was left open, and both placed in the same degree of heat. After 12 hours I examined both, & found that the blood in the stopt vessel had lost only ten grains of its weight, while that which was in the open vessel had lost 3 drachms. In the separation of the blood there was also a great difference; for in the close vessel, I found only one drachm of serum separated; but in the open vessel there was more than ten drachms separated; the density of the crassamentum also answered thereto, for in the shut vessel it was much softer & less firm than in the open one.

In like manner the effects of the air on the blood are different when received into open vessels, if one of them is placed in a stagnant air & the other in an air that is frequently renewed.

In these experiments a diversity arises from the manner in which the blood grows cold, in different vessels; which indeed, as we shall by & by relate, has a remarkable effect on its separation; & it appears no less certain, that for the most part, the greater or less quantity of exhalation depends likewise on the action of air.

Chapter 2^d^ Of the Effects of heat & cold.

It is indeed the different degree of heat & cold which chiefly varies the spontaneous separation of the blood. For if the blood drawn from a vein is preserved in a heat equal to that of a

+ It is to be noted that wherever the degree of heat is here mentioned it is meant that it was measured by Farnhenheits Thermometer.

a living ~~dog~~ body, altho it ~~ad~~emits a copious <u>halitus</u>, & remains perfectly quiet, it suffers no separation at all, but remains of nearly the same color & fluidity as before. Therefore exhalation & rest are not sufficient to produce the usual separation of the blood alone, but some diminution of heat also is altogether necessary; & we are taught by the experiments of <u>Schwenke</u> that the diminution of ~~the~~ heat to 90.° is not sufficient for procuring a separation of ye. blood.+

If on the contrary, <u>blood</u> in like manner is drawn from a vein, & immediately exposed to a degree of cold in which water freezes, or nearly that, it suffers no perceptible exhalation, nor is separated into different parts; but loosing its

fluidity, concretes into an uniform mass. Hence it appears that blood does not undergo its usual separation, either in a heat equal to that of a living animal, or in a degree of cold equal to freezing, or nearly so; but only in the intermediate degrees between them; which, as they are many, may each perhaps effect a different separation.

The middle degree of heat in which this separation of the blood can take place, is about the 64°, & whatever separation happens in this degree of heat, it appears to be proportionally less in every lesser, & more in every greater, degree of heat.

That I might be more certain of this, I instituted the following experiment, which I frequently repeated

In

In two vessels of the same figure & capacity, I received nearly an equal quantity of blood in each, from the same vein; one of which was placed in a heat of 72°, while the other remained in a heat of 54°. I examined both after six hours, & found the blood in each vessel to have lost something of its weight, by exhaling. There was about 4 ounces & a half of blood in each when first drawn; that which had been in 72° of heat had lost a little more than four drachms, but the other hardly three drachms.

In like manner the quantity of Serum separated was very different; there was almost eight drachms of Serum separated in that which was in 72° of heat, but in the other not more than 4 drachms.

As different portions of blood in this experiment

received

received in different vessels shew the effects of different degrees of heat; so the effect of a different heat on different portions of blood received in the same vessel ~~[illegible]~~ by the following experiments I was necessarily led to shew —

In one experiment, while one side of ye vessel which received the blood from the vein, was kept for some hours in nearly the same degree of heat, with that of the blood when first let from ye vein, the other side was cooled as fast as it possibly could be. Hence it followed that the blood concreted against the cool side of the vessel, & seemed to adhere firmly thereto, but the <u>crassamentum</u> remained at some distance from the other side, & that interval was filled up with a copious serum.

Here also various degrees of density could be

discerned in various parts of the Crassamentum, near the cold side the concretion was very firm, but as it extended from thence to the warm side, it became sensibly more & more tender.

An experiment of this kind occurs daily, where the vessel containing the blood is so placed, that one side is opposed to the air warmed by a fire, & the other is affected with a stream of cold air, from a door or window. This I have also often imitated designedly, and always observed the same effects wth those above mentioned.

In another experiment I caused ~~the surface~~ the surface of the blood to be cooled as suddenly as possible, while in the mean time the warm bottom of the vessel kept the under part of ye blood warm. Hence it happened that a firm concretion was

formed on the surface, that every where adhered to the sides of the vessel, while a copious serum was found at the bottom, which become more & more contracted: An experiment of this kind occurs almost every day in common practice, where the bottom of the containing vessel receives the warm blood, & retains it's warmth for some time, while the surface quickly grows cold by the contiguous air.

Further, I unequally cooled, in another manner, different parts of the blood in the same vessel. The vessel that first received the blood from the vein, I placed in another vessel, full of warm water, in the middle of this I emersed another small vessel containing water kept cool by art. The effect of which was, that the blood very firmly

concreted round the interior cold vessel, when, in the mean time, no part of the *crassamentum* adhered to the sides of the containing vessel, but round about the same a copious *serum* appeared. Nothing indeed happens exactly like this in common practice; but from this experiment we may learn, that when the crassamentum does not adhere to the sides of the vessel, but is contracted like an Island, seeming to fluctuate in the middle of the *serum*; that is principally owing to the heat remaining longer in the sides of y: vessel. Moreover, from the observations of the celebrated *Schwencke*, something like the very reverse of this experiment, sometimes occurs in practice. "In the winter of the year 1741 in the month

of January, I ordered ten ounces of blood to be
drawn from a girl; the blood received into a broad
& cold silver vessel, immediately coagulated; [viz.]
above by the cold air, below & laterally by ye cold
surrounding metal; the surface was covered wth
a gelatinous crust; but in the middle fluid, &
as it were dissolved blood, was contained, that
did not concrete into a gelly, nor was there any
separation of serum; it was believed to be putrid
blood &c" . . — I mixt all the blood together with
a knife & placed it near a fire, in 60 degrees of
heat, & the following day I saw a limpid stamineous
serum separated from the red mass, of a good appearance.

From all these experiments it appears that
the concretion of blood is always owing to the loss of heat.

for if the heat is diminished to 32°. or nearly. especially if that is done suddenly, & through the whole mass at the same time, all the blood is found to concrete. But, if the heat is not so much diminished, or not through the whole mass at the same time, a separation always happens; while some parts concrete, others remain fluid. Nor are we now ignorant of the variations wch: different degrees of heat produce, as well in the separation of the parts of the blood, from each other, as in the appearance of the separated parts themselves.

As the air of our climate is always colder than the blood of the human body. I judge it will here be sufficiently understood how the blood let from a vein is always cooled by ye surrounding air; & that

more or less suddenly, in proportion as a greater or less surface is exposed thereto —

It is not an easy matter to confirm this by experiment, because the quantity of blood drawn at one time, from one & the same person, is never so great that it may be divided into many parts, & exposed to the air in vessels of different sized surfaces, so as to try ye experiment. Nevertheless, I have often observed, wch demonstrates it to me, that according as the blood is expanded into a greater or less surface, so much ye more or less suddenly, will it be cooled, if it's done in a degree of heat below 64°; as is evident to every one. The quantity of serum separated is also in a like ratio, (viz.t) the least quantity where from ye largest surface exposed, it quickest cool'd, & vice versa.

× of consequence less cooled when it proceeds from a large than from a small wound made in the vein. Also, the orifice being given, the blood flows quicker and is.

To the same cause, (viz.) a quicker or slower refrigeration, pertains the manner in which the blood flows from a vein, into a vessel prepared for receiving it: For the blood flows quicker & is × less cooled when it falls in a steady stream from the orifice of the vein, immediately into the vessel, than when it trickles slowly down the arm, & falls, perhaps, in drops, into the vessel

That I might prove the effects in these various circumstances, I made the following experiments.

I opened a vein in both arms of a man at the same time: In one I made a very small orifice, in the other a much larger: from both I took an equal quantity of blood; which in both flowed in an equal stream, & from each arm I received the blood in separate vessels of exactly

× but that which flowed from the large orifice had lost three drachms.

the same shape & size. The vessels were set by for 12 Hours in the same air, being examined then. I found the blood drawn by the small orifice to have lost only two drachms of its weight.ˣ From the former also I found only 4 drachms of Serum separated, but from the latter 7 & 1/2. There was also a remarkable difference in the density of the crassamentum of the two; for the crassamentum from whence the most serum was separated was manifestly more dense than the other

I also made an experiment that I might discover the effect of a diversity in the manner in which the blood flowed from the same orifice. From the same vein I received an equal quantity of blood into two different vessels of the same figure & capacity; but with this difference, that one part

of the blood flowed immediately in a steady stream from the orifice of the vein into the vessel; but the other trickled slowly down the arm & remained some time on it, before it dropt into the vessel. After both had remained for 12 hours in the same heat, this difference was observable; the blood that flowed out in a full stream had lost by exhaling more than twice as much of its weight than the other; & the serum separated from that was as that separated from the other nearly as 6 to 2

Chapter the 3. Of ye effects of Motion

If blood drawn from a vein, & received into an open vessel, is stirred round briskly with a stick, or any instrument of the like kind, untill it becomes of the temperature of the air, it suffers no separation, unless as far as some part of the coagulable lymph

adheres to the rod, & is extracted with it; the remaining blood affording a species of uniform red liquor; & this happens in the common tem=perature of the air, in which otherwise there would be a separation. The motion of the blood therefore, serves to keep the red part mixed wth the serum, &, in some measure, also, ye coagulable lymph with both; there are also many things which induce us to believe, that the mixture of the different parts of the blood is principally owing to motion, while it remains circulating in ye vessels of the living body.

But in blood drawn from a vein, I have found that the violent agitation of it, before it began to grow cold, produced a different effect; & indeed always

caused a great quantity of Coagulable Lymph to separate from the other parts of the blood. Therefore, when blood is received into a vial from a vein, & is agitated in that briskly, untill it grows cold, the greatest part of it may be poured out in the form of a red fluid; while a firm thick, & white residue would always be left, exactly the same, with that which we said above might be obtained by washing the crassamentum. For here the serum does the same office that y: water does in the experiment above described, (vizt.) by washing out the red globules. But we shall speak more of both these hereafter —

In the first experiment of this chapter we said that agitation served to preserve y^e mixture of the

of the different parts of the blood; nevertheless it is to be observed that agitation, as it expedites refrigera=tion, it likewise in that sense impedes the separation of the blood —

From the history of the effects of air, of heat, & of motion, now given, it's very evident, that y.e appearances of the blood drawn from a vein, may be greatly varied, by these external circumstances; & from the experiments now related the following may be established.

That the concretion of the blood, or of any part of it, depends on the cooling of it, to a certain degree.

The spontaneous separation of the blood only happens when it is exposed to a degree of heat above 40° & under 90°. —

Hence the separation chiefly takes place when the

the mass of blood drawn from a vein grows cold quicker in one than in another part of it.

Moreover the separation is greater or less according as the blood grows cold quicker or slower —

Heat & the action of the air, while they promote the exhalation of some part of the blood, may, in some ~~manner~~ measure, vary the nature & the property of the rest —

Lastly motion variously applyed produces very great variation in the spontaneous separation of ye blood

This is the general doctrine concerning ye chief causes affecting the blood drawn from the veins. Let us now consider their effects in some manner. Those which most influence us in forming a judgement concerning the nature of the blood are these 1st the

1st the proportion of serum & crassamentum. 2dly the density of the crassamentum. 3dly its color. 4thly the proportion quantity & density of the inflamatory crust, where it is observed.

The two latter cannot rightly be considered untill we have sought more fully into the causes of them. Those things which have been observed of the two first, are as follows.

The serum is separated more sparingly, 1st. when the blood ~~was~~ is ~~ex~~ exposed to a great degree of cold. 2dly When it ~~was~~ is suddenly cooled to any degree below 64. 3dly when it ~~was~~ kept in a closed vessel, a vessel with a small orifice, in ~~stagnant~~, or in vacuo, it cooled very slowly, & therefore equally in every part. Moreover the serum appeared to be separated more sparingly when the blood was ~~expected~~ inspected

too soon after it was drawn from a vein —

On the contrary the serum is separated more ~~sparingly~~ copiously, when the heat of the blood is diminished, but not below 64°, & when ye diminution of heat within these limits, was sudden & at the same time unequal, in different parts of ye blood.

The serum is always found to be separated more copiously, when from any cause whatever the coagulable lymph swims upon the other parts of the crassamentum in a kind of inflammatory crust. Lastly the serum seems to be separated more copiously when the blood is not examined untill a long time after it is drawn from a vein —

As to the density of the crassamentum, which pertains to its concretion, 1st, It is more or less firm in proportion to the degree of cold it is exposed to. The degree of

cold being given, the density of the crassamentum will be in proportion to the quantity of serum separated from it

Here it is to be observed, that the learned Dr. Brown Langrish endeavoured to determine the various degrees of density more accurately than I was able to ~~do~~, or indeed judge is possible to be done — For the tube employed in these experiments being frequently applyed & again taken away, requires to be so often loaded with more mercury, that I always found it very difficult to apply it to the fluctuating crassamentum again without some impulse. In the most of ye experiments indeed, I could perceive an evident difference in the density of the crassamentum, but I think it is impossible to reduce it to that rule & to measure it by an exact calculation —

From what has hitherto been said, if I mistake

not, it will not appear, that all those inferences made by the author above mentioned, concerning the state of the blood in diseases, from its various appearances after it was drawn from a vein, are little to be trusted to, altho they seem to stand upon the test of experiments. For his experiments were in some measure fallacious, as in instituting them it seems as if he had hardly sufficiently attended to those particular causes, which might vary the appearances of the blood

The same may be said, perhaps, of those judgements made every day upon this matter by the practitioners in physic, who neither know nor take notice of the different causes which vary the appearances of the blood, after it is let from a vein. From the same ~~cause~~ reason also little

dependance is to be put upon what authors have said concerning the proportion of each of ye parts constituting the mass of blood. The differences that are found in the calculations of various authors upon this subject, demonstrate, that their foundations are altogether uncertain. Nor indeed do they appear to have known the particular parts ~~t~~ constituting the mass of blood. Even when the very learned Haller asserts the Cruor constitutes half, or perhaps more than half, of the whole mass &c. it is to be suspected ~~he formed~~ that he formed this conclusion, not only from the appearances in the spontaneous separation of the blood, neglecting their causes, but also that he hardly considered that the Cruor as well as the serum is a compound & heterogeneous Mass.

Thus far we have gone in considering ye diversity which is observed in the spontaneous separat^n^ of ye blood; & have looked upon the nature of it as always the same, & its appearances as depending on external circumstances only. But now it is to be observed that these phenomena may also be varied by the different state of the blood itself. For the parts of the blood may be <u>different</u> in their proportion to each other, as well as different in y^e^ <u>properties</u> of each. Nothing more is to be wished for in <u>medicine</u> than that we could be able to determine this diversity both in the proportion & quality of the different parts of the blood; & from the judgements formed every day in this matter, some may imagin that this thing is sufficiently known; but I mistrust that our knowledge of the matter is by no means

perfect, therefore I beg leave to offer those observations which I have made on it, in a late strict examination of the subject —

Section 2d

Of the nature of the different parts of ye Blood

In the spontaneous separation of the blood above explained, we mentioned the manner in which the <u>crassamentum</u> may be resolved into two parts, vizt; one commonly called the <u>red globular colored part</u>; & the other which we called with <u>Senac</u> ye <u>Coagulable lymph</u>. The <u>serum</u> also we said might be resolved into two different parts; the one the same with the coagulable lymph of the crassamentum; the other an <u>aqueous</u> fluid that contains a saline matter dissolved in it: for if the usual separation of the serum, spontaneously produced, is placed over

the fire for a little while, till it has acquired 150° of heat, the whole concretes into an uniform tough mass; which mass, if it is afterwards divided with a knife into small segments, an aqueous saline liquor exudes from its pores, which is called by Senac la serosite (the Serosity).

Hence it is evident that the blood is principally made up of these three parts (viz.t) Coagulable Lymph, ared globular, & an aqueo-saline ~~aqueous~~ part. And of these we will ~~shall~~ now treat in order —

Chapter the 1st, Of ye coagulable lymph.

This, in what manner soever it is prepared, has the ~~same~~ following qualities —

It affords no perceptable taste or odor —

It is always of a somewhat tough & firm

consistence, but in different degrees according to the various conditions in wh it is prepared, i,e, ~~according~~ according as it is exposed to a greater or less degree of cold, during its concretion, or according as more or less serum, by that means, is separated from it. Hence the coagulable lymph prepared by agitation is commonly firmer than that which is obtained by washing ye crassamentum; also if it is prepared ~~to~~ either by ablution or agitation, when exposed to the same degree of heat its always firmer than ye coagulated serum itself.

In whatever manner the coagulable lymph is prepared, it has no proper fibrous texture. But when it first concretes into thin filaments, these are afterwards mutually folded together so as to

afford somewhat of a *fibrous* appearance.

The *color* of this Lymph is always more or less *white*, in proportion to the *greater* or *less* care taken in washing it from ye other parts; so that when it is accurately obtained it approaches almost to snowy whiteness.

While recent it is always opake wth whiteness but as it gradually dries it becomes more pellucid loosing, at the same time, its whiteness, becoming first of the color of horn, then ambered colored, & at length of a dark readish color like myrrh

When by drying it has become *pellucid*, especially if it is not perfectly dry, if it be again ~~be again~~ put into water it absorbs some part of it, & by that means somewhat

of its

of its pristine opake whiteness will be restored.
From hence it appears very probable that the opacity of the coagulable lymph is owing to some serosity being retained in its pores. ~

When coagulable lymph is exposed to 150 of heat, its bulk sensibly lessens, & it becomes of a much firmer consistence: but in a yet greater heat, even to ye: burning point, it suffers some fusion ~

When placed on burning bodies, while in contact with them, it burns itself, & in some measure emits flame with a crackling sound, the same as happens to a mixture of oil & water thrown on burning bodies; but if the burning lymph is removed from the contact of the burning body, it presently ceases to burn or

or emit flame: when retained some time on burning bodies, much of it remains unconsum[ed] by the fire, in the form of a black coal. Whilst burning it emits exactly the same odor as feathers, horn, & other solid parts of animals. From all which it can hardly be said that our lymph is not an inflam̃able matter, as it plainly contain[s] something inflamable in it —

Coagulable lymph separated from the other parts of the blood, as now related, & exposed to a dry air, grows gradually dry & hard with the circumstance[s] above related, without any sign of putrefaction; but if the same, recently prepared, be thrown into water, & there exposed to the open air of a moderate temperature, it appears shortly to tend to putrefaction; acquires a fœtid odor,

becomes of a brown color, growing deeper every day, & at the same time looses its consistance, appearing in the bottom of the vessel like soft mucus

These symptoms of putrefaction happen quicker or slower according as the lymph was more or less accurately separated from the aqueo-saline part, or according as by any means it becomes of a more or less firm consistence.

Thus the fluid Serum as well because of its fluidity, as perhaps the nature of its aqueo-saline part, grows putrid quicker than the concreted lymph; & the lymph coagulated by heat, or made very dry, grows putrid much slower than lymph recently prepared from the crassamentum. I found ye coagulable lymph so very prone to putrefaction in any state, that I wonder the illustrious Senac should have

* traité de la structure du coeur tom 2 cap 10 p 95

said that this matter might be preserved a long time in water without any odor or putrefaction & when on the contrary I constantly found that in ye usual heat of our chambers, in the winter time, it began to emit a fetid odor in 5 or 6 days time, but in summer in the space of two or three days.

These are the qualities of the coagulable lymph considered per se; it follows that we should consider its nature as observed from the effects of different substances mixed therewith

Acids of every kind moderately concentrated & mixt with the coagulable lymph manifestly corrugates & ~~manifestly~~ ~~... ~~ contracts it.

The vitriolic acid in its most concentrated state mixed with the lymph, appears first to corrugate ~~it~~ & contract it, but afterwards by adding

×× Traite de la structure du Coeur tom 2 cap iv p 85

by adding more entirely dissolves it without much efferveſcence or ebullition changing it of a brown or blackish color

The concentrated muriatic acid when mixed with the coagulable lymph, does not sensibly corrugate or harden it, but when it has gradually penetrated its substance, it causes an intumescence easily perceptable & becomes of a more lax texture.

At the same time many air bubbles may be seen rising to the surface of the liquor. About an hour after the muriatic acid is mixt with the coagulable lymph it begins to appear of a light blue color which increases for the space of two days till at length it becomes of a full sapphire color; in the mean time its texture is so much destroyed, that it appears

as it were dissolved in the acid ~

Common Alkalis viz.t those saturated w.th air, either fixt or volatile when applyd cold have no apparent effect on ye coagulable lymph; but caustic alkalis of either kind very quickly & wholly dissolve it without heat. There is no need that I should here note any of ye experiments of the ~~illustrious~~ celebrated Senac made with alkalis on the same substance, because he did not perhaps sufficienly know the difference between common & caustic alkali which was first accurately defined since that time in England ~

The coagulable lymph thrown into a solution of soap is not dissolved, but softened & converted into the form of a lax mucus. Neutral salts dissolved in water make no change on the coagulable lymph. ~

Alum & some metallic Salts as vitriols when dissolved manifestly corrugate & harden the coagulable lymph.

Pure alcohol applyd to the coagulable lymph renders it more corrugated & harder than any other substance I made use of.

~~The qualities now stated hold good of the coagulable lymph properly~~

The coagulable lymph diligently triturated with water a small part of it is dissolved & passes through the strainer

Treated in the same manner wth urine it becomes accurately divided & appears dissolved by If this solution is exposed to 150° of heat the lymph in it is wholly coagulated & ~~separated~~

& separates into small clods or molecula owing perhaps to ye Quantity of urine here made use of.

The qualities now related hold good of the coagulable lymph properly made either by washing the crass amentum or agitating the whole blood as above explained. But here it is also to be observed that the same qualities are to be found in the coagulable part of ye serum, in that which is called the inflamatory crust, in the white of an egg, & lastly in cheese or the coagulable part of milk, so that all these matters are very nearly if not wholly ye same as the coagulable lymph. For the proof of wch its not improper to relate here wt I have learnt by experience.

That the serum is made up of two parts as we have already said, ye following experiments demonstrate.

I have separated from the serum agitated with a stick a matter like the coagulable lymph as well in its nature as manner of obtaining it, the remaining part being more aqueous.

While I attended to the phenomena of the serums concreting by heat, which is made up of two different parts, I observed ye following appearance. A quantity of serum being placed over a candle, in a globular vessel, it grew hot gradually to the coagulating degree; the concretions appeared to begin in the parts of the fluid nearest the sides & bottom of the vessel, & from every one of these points, thin filaments appeared to shoot out to the middle of the fluid; these filaments were distinctly discernable, for some time in the fluid, in wch they concreted;

but at length the whole of it concreted, into an uniform mass.

The above coagulated serum was of a laxer texture than the coagulable lymph extracted from the crassamentum, owing very probably to its holding almost the whole aqueo-saline parts commixed with it, as is proved by its loss of weight in drying. In one case I found an ounce & a half of serum was reduced by drying to two scruples & a half; in another 25 drachms of serum was reduced within two drachms of a fourth part of its weight; & I found that greater loss of weight to happen either in the lymph separated from ye crassamentum, & afterwards heated with fire, or in ye coagulated white of an Egg. But both were reduced to the

to the same degree of dryness, which I was able to determine sufficiently well from their color —

We find indeed a quite different reason of this thing in the experiments of Tabor; for he obtained ~~20~~ 12 ounces of solid residuum from 20 ounces of fluid serum subjected to evaporation. But it is very probable that in Tabors experiment, heat was suddenly applyd to the coagulating degree, & that coagulated serum was taken for the residue remaining after evaporation; nor did he attempt to exsiccate this coagulated mass, as plainly appears from the color of it which he describes, viz like that of new cheese or Gum ammoniac —

The coagulated serum undergoes the same changes which I said above happened to the

coagulable lymph; for when dryed in ye same manner it becomes perfectly pellucid. But from what the illustrious Senac has said concerning this matter, it appears that he never rightly made an experiment of this kind.

When the coagulated serum is made pellucid by drying; if thrown again into water it becomes again opake, which we before observed in ye coagulable lymph; & as in that, so in this case tis evident the opacity depends entirely on the aqueous fluid inviscated in the pores of the concreted mass.

The whole that we now have related of the serum sufficiently shows that ye serum of the blood as above mentioned is made up of two parts. viz. a coagulable part & an aqueous fluid.

But the

But the following experiments more fully prove that the coagulable part is exactly of the same nature as the coagulable lymph.

In the following experiments I treated Serum coagulated by heat, with which the aqueo-saline part was as yet mixt; & it was in no wise easy to obtain the parts of the serum separated from each other. But I examined the coagulable parts separated from the aqueo-saline part as accurately as possible in the manner above mentioned, & I found so little difference to arise from thence as to be unworthy of notice

Coagulated serum, made of the same degree of dryness, & thrown into the fire, burns exactly in the same manner as the coagulable lymph.

In

In both, in the same circumstances, there appeared the same proneness to putrefaction.

In both likewise, the effects of those saline bodys, wh I made use of in these experiments, were entirely the same, & in particular the same blue colors produced by the muriatic acid in the coagulated serum as in the coagulable lymph.

They also agreed in undergoing the same changes from soap or alcohol applyd to them.

From similitude of properties we may confidently assert, that the matter of both is the same. Nor, do I think it necessary to relate or explain here, the common experiments that are generally made wth various mixtures wth the fluid serum which indeed I have often made: for it is easily understood from what has been said that acids, alcohol, & heat chiefly affect the coagulable part of ye serum; & that serum contains coagulable lymph as it affords

affords the same appearances as we have already said with the two former as also wth the latter. And if there is a diversity in any manner in the phenomena arising from the admixture of these, that, may easily be explained, from the fluid state that this coagulable matter is then in.

The only difficulty that seems to occur whether the coagulable matter of the serum is, as we have affirmed, exactly the same as the coagulable lymph, is this, viz, because it is difficult to explain when, from the diminished heat of the blood, some part of the coagulable lymph concreting is separated from the serum, why a part of it, if indeed it is exactly of the same nature, should remain mixed with the fluid serum, but that difficulty seems easily removed, if we consider that the whole mass of blood is like a supersaturated solution, in which the matter is kept diffused by heat & motion.

but

but that the Serum contains no more in itself than what it can easily suspend in a moderate heat or the usual temperature of the Air

Therefore, the coagulable part of the serum is always the same, as the coagulable lymph of the crassamentum; the same matter is also sometimes spontaneously separated from the other parts of the blood, & is thrown up to the surface of ye crassament, affording that well known inflamatory crust. But this, after the properties of the coagulable lymph have now been so fully explained, & its being so obviously of the same nature that I think it unnecessary to mention it, unless as there have heretofore been many (& perhaps are yet) who reckon this a morbid fluid. But as I had the greatest oportunity of examining this, in every experiment I found it to have exactly the same qualities as the coagulable lymph in whatever manner prepared.

In drying, putrefying, & burning, it afforded exactly the same phenomena as well as in every other tryal I made with it, & what I here reckon as a criterion it exhibited the same blue color with the muriatic acid; therefore it is exactly the same —

This only is to be observed in particular of this matter, vizt that the coagulable lymph has this property, that it tends to separate itself at certain times, more than others, from the other parts of the blood. But in this it is understood different from what was formerly observed by the very sagacious Sydenham & others concerning the circumstances on which its separation was observed to depend vizt. to the same causes which we observed above affected its spontaneous, ordinary separation: But on what this depends

is

is not easy to determine; whether the various causes were properly noted & observed in all which it appeared, I very much doubt. Moreover from experience I have understood more certainly that among those who bleed only for the preservation of health, or, in the blood of those who are in perfect health, & who continue well for a long time after, this crust often appears. Therefore it is in no wise certain that this separation is always morbid, nor when it is morbid, will it be easy to determine the cause of it, until many things have been observed by which means the different states of the coagulable lymph are better understood.

Some imagine that its separation in certain cases depends on there being a greater quantity of it in the blood than usual, & this indeed may be the case, but by what arguments this can be proved

to

to be the case I am altogether ignorant of.

If this was the case, we would imagine its separation would hardly be prevented in the small differences in ye manner of cooling it, which nevertheless is found to do it at all times; when the coagulable lymph is separated *per se* the remaining part of the crassamentum is always proportionally diminished & of a much more lax & tender texture & at the same time we always find ye quantity of serum increased so that no one can easily affirm that the more solid & coagulable parts of the blood are then present in greater quantity.

It has long since been observed, that the serum of the blood contains a matter of the same nature as the white of an egg; & our experiments demonstrate that this albumen is the same as the coagulable lymph; but I judge that the albumen

ovi

albumen ovi is a coagulable lymph in its purest form, if for this purpose nature separated it from all other matters except the purest water; but in every other case the water that is mixt with the lymph contains at the same time a small quantity of saline matter —

In all other properties I found in every experiment that the white of an egg & coagulable lymph were the same; with this difference only, that the aqueo-saline part which was in ye lymph might affect it. Thus the albumen grew putrid some what slower, & when coagulated by heat was of a firmer texture, than the coagulum of ye serum; & the concrete was more opake & white as well as more friable —

The albumen in drying becomes pellucid &

& undergoes the same change of color as the coagulable lymph, only not in the loss of its weight, loosing only one fourth part of its former weight in drying —

Made dry, it afforded exactly the same phenomena in burning —

With acids, alkalis, soap & alcohol, it afforded also the same phenomena; & especially the same chang of color by the muriatic acid —

Therefore, there can be no doubt, but the white of an egg, & coagulable lymph, are ye same; & from the use which we know the white of an egg is by nature destined, the coagulable lymph is without doubt that animal fluid, to ye supplying of which our aliment is taken, & to the preparing which other animal fluids are provided & the

same

same is destined to the nourishment of the body itself ~

To the illustration of our argument, or at least to the explaining the nature of the animal fluids seems to pertain, the observation of coagulable lymph being always present in the milk of animals, & especially in its coagulable part, a fuller proof of which would be unnecessary here; some marks that might be adduced are obvious, this only I would remark that I found cheese change its color by the muriatic acid in the same manner as coagulable lymph, coagulated serum, ye inflamatory crust, & white of an egg above mentioned ~

Having given the history of the coagulable lymph, we will proceed to the consideration of the other parts of the blood, & first of the other part of ye crassamentum viz.t that which we call the red globular part ~

Chapter 2d

Of the red globules of Blood

A knowledge of this part of the blood so as to distinguish it from the other parts, is obtained by microscopes, but the observation of things so minute is difficult &, if I mistake not very often fallacious, as appears very evident in the present case, in wch authors disagree much amongst themselves.

The ingenious System of the discerning and skilful Luwenhouk, was so faithfully delivered by him, that it was commonly received for a long while by physicians; but now appears to be disapproved of every where. Therefore, in a thing so uncertain, it cant be expected that my small experience in micro=scopical observations, should determine any thing wth certainty. Wherefore, concerning those things which are said by various

by various authors of the composition, size & figure of the blood globules, consult the authors themselves; as I will here only treat of those things wch I was able to subject to proper observation and experiments.

and,
In the first place, we will consider the red color of the blood; & the various states of its redness, to wch physicians very often attend; when, in various diseases they form a judgement concerning the state of ye blood.

It appears from every observation, & is now well known, that the red color of the blood depends on the globular part mixt with it, vizt that which will not coalesce chemically with the other parts but flows separately as oil & water, it is necessary that it should appear in a globular form.

This coloring part, although it diffuses color through the whole mass, appears to be very small in comparison

to the other parts. For if we consider ye quantity of serum that is separated from blood, that is drawn; the coagulable lymph remaining after the ablution of the crassamentum, & besides a quantity of it that is washed out with the globular part, all of which are destitute of color; we must necessarily conclude, that the coloring part only is very small; & much more so when this coloring matter, collected from the liquor used in its ablution, appears so small.

But this reasoning appears by no means satisfactory to those, who either embrace the doctrine of Lewenhouk concerning the composition of the blood, or that more modern one of the celebrated Senac who asserts the globules of blood separately viewed are entirely destitute of color, & that the red color only appears when some of them are placed upon others; & Indeed according to

to both hypotheses the quantity of the globular part of the blood is less certain as far as its known color may be absent. But as ye hypothesis of Leewenhoeck is now rejected by more modern observers, what might be objected from that quarter is unnecessary to be attended to — Nor is the doctrine of Senac altogether certain, since Haller has found, by his experiments, that each globule is of a red color. Moreover we grant that the doctrine of the celebrated Senac is in some measure true, as it cannot be denyed but that the globules may be so diffused thro the serum, as to loose their color. —

For from the experiments hereafter to be related, we find that the red globules cannot be dissolved or suspended in the serum, & altho they contain but a very small quantity of coloring matter, they will

import

impart a color to any fluid destitute of it tho in great quantity — the globular part of the blood is easily diffused & suspended in the aqueous part, but it is necessary that its quantity should be very large in order to extinguish the color of the globules in it.

I found that one part of red globules considerably colored a thousand parts of water. Therefore, it can hardly be, but that some parts of red globules will either be diffused in the serum, or remain in the perfectly white coagulable lymph. It remains therefore that we should determine certainly the quantity of the coloring matter from its spontaneous separation & from thence prove that it is very small —

Altho we allow with the illustrious Haller that the globular part of the blood is always constantly colored. Nevertheless whether this color is more or less

intense, in each globule, in various circumstances; & especially as the animal from whom it is taken is in full strength or languid, we have not determined, but refer the reader to the very learned author above mentioned who alone appears to have observed this.

What happens to each globule, has little reference to the point in hand: its more to our purpose that we should consider the changes of color that happens in the collected mass of globules, as from these physicians often judge of the state of the blood

The mass of red globules is sometimes of a darkish purple red color, at other times of a bright florid cochineal color, or lastly of the various intermediate degrees between these. From this variety in the color of the Blood, physicians often form conclusions concerning its various properties. But very injudiciously, do many

as many things persuade us that its color depends rather on the various mixture of the blood, than on the nature of any of its parts.

Thus, greatest part of the crassamentum is blackish, but being diffused thro a proper quantity of serum it becomes of a florid color

Blood that is prevented from separating either by gentle agitation, or being contained in a close vessel, is always of a florid color

That blood also is very florid, which being suddenly exposed to cold, entirely concretes without any separation of its parts

The florid color therefore appears to depend on whatever keeps the globular part diffused every where thro the other parts, & on the contrary, whatever causes a more copious separation of the serum, that, proportionally, induces, a greater blackness of the crassamentum

When

When the coagulable lymph is separated from the other parts, as happens in inflamatory diseases, the serum also as we before said is separated in greater quantity; so that from these two causes ye cruor becomes blacker than in any other case.

From these observations it appears evident, that the color of the blood drawn from a vein, depends chiefly on the red globular part being more or less diffused thro the ~~whole~~ other parts; & from thence, on the various circumstances affecting its spontaneous separation. The color of the blood therefore, cannot, unless cautiously & with the greatest attention of mind, be taken for a mark of its state, & especially if, as is now asserted by many, the color of the blood is also affected by air.

The florid color of the surface of the crassamentum,

while

while in the mean time the inferior part is much blacker, is commonly brought as a proof of this. But that appears more easily explained, if we consider that the coagulable lymph, which is always tending towards the superior part of the crassamentum, there more divides & diffuses the red globules.

For a proof also of the effects of ~~air~~ the air is commonly adduced, the observation of that part of the crassamentum, which whilst it is immersed in the serum, is more black or purple; but, being exposed to the air is changed to a florid color.

But this is not altogether true; for the cake of crassamentum being inverted, does not become of a florid color in every part, but only in the superior part; but chiefly that to which a quantity of serum, that as yet remains fluid in the placenta, can arise to.

Mixture therefore, rather than the air, is the cause that produces a diversity in the color of the blood. But still it is objected to this, viz that a part of the crassamentum, immersed in the serum, ought to be diffused in it & afford a florid color. But its easy answering this; for the red globules will not spontaneously coalesce with the serum, & besides concreting in the small separated clods, with the coagulable lymph they are all shut up as it were in its membranes, & being prevented by that means, they are so much the less diffused. For the crassamentum, which has been less regarded, is, for the most part, made up of separate clods, each of which appear to be included in separate membranes, & this species is very often observed in uterine & other hemorrhages.

There is observed a great difference in the color of the arterial & venal blood. This difference ought therefore to be considered here —

It is observed by almost all medical writers, that the blood of the arteries, is of a more florid red color ~~than~~; that of the veins, of a dark purple color. except by the illustrious <u>Haller</u> who alone perhaps objects to it —

His observations were chiefly made on the blood from the pulmonary artery & vein. but these are by no means a solution of the question. For experiments of this kind cannot be made unless the alternate motion of the lungs is interrupted, by which means the color of the blood in passing from one kind of vessels into the other, will be changed

changed. And the same may be objected to his observations on the blood of frogs, in which respiration so quickly ceases ——

The experiments of Lower & others made for this purpose, appear entirely contrary to the experiments ... of Haller, & serve rather for confirming the common opinion ——

The egregious Haller himself in his primae lineae acknowledges, that he has often observed a difference in color, between the arterial & venal blood; & in his commentaries on the motion of the blood, lately pub=lished, where he made the experiments on the crural vessels, found himself an evident difference.

I have also very often made experiments of this kind, & always found a manifest difference in color, therefore

Therefore I conclude this is always the case, nor does it appear very difficult to assign a reason for it.

We found the coagulable lymph evidently to be in a greater quantity in the blood of the arteries than in the blood of the veins; & it is that lymph, that properly mixes, & equally diffuses, the red globules; for the aqueo saline part is less fit for ye purpose.

For some of the lymph that adheres to ye arteries, and exhales from their extremities, is, continually received by the absorbents, & returned to the heart by the valvulous lymphatics; so that there is a less quantity of it in the veins: which, with the diminished motion, which also happens at the same time here, more easily admits the red globules to separate & concrete into firmer masses, which, from

from thence will afford a more purplish color; but the affusion of the lymph again into the subclavian vein, restores the usual quantity, and a more accurate diffusion continually following in the passage of the blood through the lungs, it at length again becomes of the florid color commonly observed in the pulmonary vein & aorta.

All this which I have very often observed, is confirmed by this; vizt that the arterial blood is more prone to concretion, & less to separation, into its different parts, than the venal blood; & truly in the experiment I made, that afforded more coagulable lymph than this

From all which it may be concluded, that there is a difference between the arterial & venal blood, which depends as well on the different proportion of ye constituent parts, as on the different degrees of motion it is subjected to, & which likewise shows itself in a different color

Having said thus much concerning the color of the blood, we will now proceed to enquire into the nature of ye part itself yt affords the color –

In what manner I was able to obtain the red part of the blood accurately enough separated from the other parts, to make experiments on it, will easily appear from what will be by & by related.

The coloring part of the blood is easily diffused, or rather dissolved in water, in every state. For at no space of time, in which I made ye experiment, it separated from the water in which it was diffused

The celebrated Gaubius seems to be of a different opinion, as appears from paragraph 342 & & those things are altogether true which are there treated of by the celebrated author. But I also

found

cxfhetta rubella

found that the red part of the blood, might be entirely washed out, with water, from ye crassa=mentum coagulated by fire: & it is not to be doubted, but that the coloring part, might have been washed out, or dissolved in water, from the × reddish cake as he calls it ―

I found that the red globules of blood, would not unite in the same manner, with the serum as with water. They may indeed be in some measure diffused in the serum by agitation, but as soon as ever the agitation is stopt, & it grows quiet, the red globules fall to the bottom; this happens when taken in any proportion whatever. And hence that is easily resolved in which the industrious Dehaen was so much puzled ―

The same also happens in urine, in which the

red

red globules, however accurately diffused; will not remain suspended. Hence is understood why blood discharged with urine, falls to the bottom in the form of a black grumous mass.

In the former experiment, I suspected that the saline nature of the serum was the cause that prevented the red globules from uniting with it; & that is confirmed by the last experiment with urine; & is as yet more fully proved, by the experiment of adding sal ammoniac to water, in which red globules are suspended, which causes a precipitation of them in some measure.

From these experiments we may now learn, that the best method of obtaining the red globular part of the blood, separate from the others; is, by washing the crassamentum with serum, instead of water.

We may at the same time learn from those experiments, that there is a repugnancy, or, if you will a repulsion, between the red globules & serum

And

And that this is the cause that makes the red part of the blood of a globular figure, vizt the same by which oil diffused in water becomes of a similar figure.

This figure among other things induced ye celebrated gaubieus to assert, that the red part of the blood was of an oiley nature. But we have not only have explained the globular species other where, from hypotheses, but also, that the red part dissolves in water and looses its globular form, which sufficiently shews that it is not of an oiley nature.

That I might determine this matter more certainly, I endeavoured to mix the red globules with oil; but I could not diffuse them in that fluid, unless by triture or vehement agitation. and in whatever manner it was effected I found that water poured on them so mixed, immediately washed out the red globules into ye water, leaving the oil without any color. — I

I tryed also to join some red globules with oil by means of heat, but the red mass appeared to ~~have~~ admit of no fusion, neither did the oil receive the least tincture from ym.

The red globules are said ~~to be~~ by some authors to be very inflamable; but from my experiments I I found nothing more than the dryed coagulable lymph inflamable

It is said by some, that the red globules, when distilled, afford a greater portion of oil than the other parts of the blood; but no dependance is to be put on these experiments, which I think is not a proper way of examining a quantity of red globules, or of preparing them sufficiently pure, or separated from the other parts of the blood.

Some also suppose, that the red globules are of a resinous nature, for the discovery of which I threw

a

a quantity of them into Alcohol, & in this they seemed indeed to be diffused; but a portion of ye coagulable lymph, which in some measure necessarily attends the red globules, was immediately coagulated by the alcohol, & this in a short time carryed the red globules, together with it, to the bottom.

Moreover, that I might find out the nature of the red globules, I mixt various saline matters with them.

The concentrated vitriolic acid applyed to globules of a florid color, immediately changed them into a blackish purple, at the same time making a perfect pellucid solution of them, very different from that black opacity which happens, from a mixture of oils with the same acid.

The nitrous acid applyed to the same red globules, entirely dissolved them, the red color wholly vanishing, is

is changed into a greenish.

The solution made in both of these experiments, by adding fixt alkaline salt, may be again changed into a reddish dilute yellow color.

The muriatic & vegetables acids affected no perceptable change in the color of the red globules, & appeared to dissolve only a small part of them, the greatest part in the mean time suffering no change, fell to the bottom of the vessel, in wch they were agitated together.

The red globules were wholly dissolved by caustic alkalis, fixt or volatile, into a solution of a more florid red color.

Chapter the 3d

Of ye Serum

We have already said, that the serum of ye blood, is composed of coagulable lymph, & an aqueous fluid, containing some saline matter dissolved in it.

We

We have treated of the former above; the latter
vizt the aqueo saline fluid remains to be considered

But in what manner this is obtained separate
from the other parts of the blood, I have explained
above. when thus prepared it differs very little either
in consistence, specific gravity, or color, from pure water.

Made moderately hot, it affords exactly the same
odor; which, as we above described, arises from blood,
immediately after taking it from a vein.

The aqueous part of the Serum has a very acrid,
& plainly saline taste, very like what is always
perceived in the perfect Serum: & the acrimony
of the serum, as its coagulable part is of so insipid
a nature, is always to be ascribed to ye aqueo saline part.

This aqueo-saline part grows putrid slower
indeed, than the whole Serum; but at length it affords
all

all the symptoms of putrefaction & resolution, letting fall an earthy matter to the bottom of the vessel, & showing a black serum at the top.

The same part exposed to a boiling heat, becomes turbid, and produces the same change on it, as from the affusion of the vitriolic acid or alcohol. Which I judge, does not depend, on any property of the aqueo-saline matter, but, is to be imputed, to a little of the coagulable lymph, adhering to it.

If the aqueo saline part is kept boiling for some time, almost the whole of it is dissipated by exhalation, leaving only a small part of it, which by continuing the evaporation becomes gradually of a thicker consistence & more acrid taste —

A plate of polished copper thrown into the aqueo-

saline

aqueo-saline part of the serum, is shortly tinged of a blue color, & the plate itself covered with an aeruginous bluish green crust: which phenomenon was formerly observed by the discerning Gulielmines to happen to ye serum itself —

By adding fixt alkali to the aqueo-saline part, a volatile alkaline odor, which did not appear before, immediately arises —

The vitriolic acid, being added to the same, a manifest muriatic odor, exhales from it —

It is sufficiently evident from these experiments, that the aqueo-saline part of the serum, is a water imbued with ammoniacal salts, the greatest part of which is of the common kind. There are other saline matters contained in it, but from the small quantity of this matter that I was able to obtain for

for examination, I could not determine what it was. But as it is very probable that the urine is derived from it, therefore we may suppose, that there are nearly the same salts in it, as in urine —

Nor is it to be doubted but that a subtle oiley part may be found in both fluids, but it is very difficult to separate it so as to subject it to examination, & discover the proper nature of it —

Some part of the blood seems yet to remain to be examined vizt the halitus, or vapor above mentioned, exhaling from blood, recently drawn from a vein. But this by no means deserves to be treated of separatly, if it differs so very little from that which we now have been considering, for we have said, that this made hot, always affords a matter equally volatile, & of the same odor, as the spontaneous halitus. —

I found

I found in the collected halitus, the same taste as is in the Serum, but much milder. for much of the saline matter, is not sufficiently volatile, to fly off in a degree of heat which evaporates the halitus. The halitus differs therefore from the Serum, in this, that it contains less of the saline matter in it; & from the aqueo-saline part of the serum separately taken, we find it to differ in this, that it grows putrid quicker, which is owing perhaps, to the saline matter, contained in it retarding putrefaction; to which its other parts are prone; for a portion of coagulable lymph always adheres to it, & it is very probable, that it is that portion, that is most prone to putrefaction.

We have now treated of the three different matters, which we said in the beginning of

this

this Dissertation, chiefly constituted the parts of the animal blood. It seems therefore as if we might put an end to this subject; but before that can properly be done, this obvious question ought to be answered. Whether or no, there are any other matters, besides those we have now mentioned, in the blood? And indeed it is by no means to be doubted but that there are also other matters, either casually or constantly in it: but it seems very difficult to determine what these are. For they can neither be observed by the senses, nor obtained separate from the other parts, unless by such violence as destroys the mixture of the whole. For all now agree that chemical analysis is, an improper method of examining the nature of mixts; wherefore I have neither made use of that method, nor the

the experiments of others who did make use of it, in forming deductions ~

Nor do I see how ~~it~~ we can answer the question unless we determine, concerning those matters that are in the blood by those that are secreted from it. But as it is by no means agreed upon, among physicians, how much the humors are changed by the ~~secretories~~ secretions. it will as yet hardly be allowed to determine concerning the nature of the Blood, from the secreted humors. Therefore, we shall here entire-ly omit a disquisition of this kind: only saying a few words concerning some things said by the illustrious Senac, with regard to this.

Besides the parts which we said were in the blood, Senac will have it that there are

two

two others always in it, vizt one which he calls the gelatinous, the other the mucous part.

The gelatinous part is that which is commonly extracted, from the solid parts of animals by decoction: This indeed, is found in every particular, to be not a little different, from the parts of the blood. above treated of. nevertheless the illustrious Senac supposes it to be in the blood; because as the solid parts of animals, are formed from the fluids, whatever we find in the composition of the solids, that ought to have been before in the fluids —

So it seems indeed; but it is by no means certain either that what is obtained from the solid

parts by decoction was formerly present, as they say, in the solids; or that what we truly find in the solids, first formally existed in the Blood; & the thing itself extracted from the solids of animals is not a gelatinous solution of their whole substance, but rather some part separated from a resolution of the mixt, as we are taught by the experiments of Geoffroy. For he examined it by a chemical analysis & always found, that the extract or gelatina differed considerably from the residue of ye same

The gelatina therefore does not formally exist either in the blood, or in the solid parts of animals.

Moreover

Moreover, although we suppose that this gelatina may be extracted from the whole solids without any resolution; yet, we must not from thence conclude for certain, that this kind of matter first existed in the mass of blood; for it might have been formed by secretion, before it was applyed to the nourishments of the solids. Nor is this a mere fiction; for it is not to be doubted, but that the white of an egg, supplies the chick with fluids, & if there was any gelatina in them, it should be attainable from the albumen, & in adult bodies from the coagulable lymph analagous to it. Therefore, it is unnecessary to suppose that there is any other fluid for

forming

forming the solids of animals, besides coagulable lymph. And for confirming this matter I found by experiment that the gelatinous matter might be extracted from the white of an egg, by decoction in papins digestor

The other matter which the illustrious Linnæ supposes in the blood, is, the mucus which is secreted by those glands called simple, in so many different parts of the animal body. The celebrated Haller & Gaubius also suppose the same; tho the reasons of their judging so, does not appear so evident. Gaubius says it is of the nature of vegetable mucus vizt a gum like that of vegetables. And without doubt some of this is taken in together with our

vegetable aliment, but I know no mark of its appearing unchanged in the animal fluids.

The illustrious Senac, does not determine, from whence the mucus arises, which he supposes in the blood, only judges it to be there, from the quantity which is found secreted, & from the single experiment, in which, from the follicles in the internal surface of the stomach, he expressed a greater quantity of mucus, than he thought they were able to contain of themselves; therefore he judged, ~~he judged~~ that the mucus was derived immediately from the extremities of the arteries, communicating with the follicles.

For first since the humors, while they pass

through the secretory organs, are oftentimes supposed to be changed, it cannot certainly be determined, that any secreted humors, first existed in the blood; & there are many, who are persuaded that the mucus is changed, especially in ye follicles.

But we cannot fully discuss this point unless the properties of this mucus is rightly defined. In defining which, indeed, we have the great reason of those which are mentioned by the illustrious Senac but less confidence is to be put in these, since some experiments, published by an ingenious person, in this college, teach us, many more things concerning the nature & properties of mucus than Senac.

From

From which also we may be led to believe, that the mucus does not differ so much from the coagulable lymph, but that it may be derived from it, nor is it necessary to suppose, that there is any other fluid in the mass of blood that furnishes it

As to the experiment of the illustrious Senac, which relates to the stomach, on which his hypotheses depends; besides the uncertainty of the quantity of mucus that the follicles can contain; it is too much to allow, that the mucus does not change in passing thro the ~~follicles~~ glands. For the contrary appears from well known experience that the mucus while

it

it passes into the follicles, from the extremities of the arteries, is, very fluid & dilute, very acrid & easily soluble in water; but when it has stagnated in the follicles, it becomes of a thick viscid consistence, of a mild bland taste and not diffusible in water —

The illustrious Senac indeed, offers some other arguments besides these, to support his opinion; but as they are easily answered, we shall omit them here: & from what we have now said, I hope you are satisfied, that it is by no means necessary to conclude that any matter like secreted mucus, is, in that form, in the common mass of blood —

I

I have now at length finished this subject, if not with that copiousness & dignity to which it is equal, yet, as far as I was able, thro inability & the present state of affairs, and I hope that I shall hereafter become more perfect in it. In the mean time, from the equity & the usual indulgence, which I venerate in the learned professors, & fellow Students, whom I dearly love & honor; I beg & pray to accept of this —

Finis

Extracts &c.

No. 1 –

There is a satisfaction for which I cannot account, & that too not a small one, which results from imparting our distresses to a person who has sensibility to discern their poignancy, & humanity to commiserate the sufferer; as if, by communicating it we had disburdened our minds of a part of its griefs, &, by dividing the current lessened its force. — It is not, however, solely upon my own account I take this liberty, but to do justice to the fair sex, &, as it is a duty I owe to the memory of one, whose untimely loss I shall ever regret, vindicate them from those injurious reflections generally cast upon them by the undeserving part of ours.

It is no less a just, than melancholy observation, that there are a great many instances of unhappy marriages: this serves not a little to bring the institution into disrepute. When two young people meet together, ought not the happiness of both to be the only motive and end in view? should it not be with a resolution to contribute their utmost endeavours to soften those cares which of necessity intrude and improve their mutual joys. How truly worthy of envy is such a state? But instead of this, the practice is sometimes directly contrary — each strives which shall make the other miserable; strange infatuation! Though I must confess it is most frequently owing to the careless indifference, the cool neglect, or imperious carriage of the lordly pilot wherever the bark of love miscarries. But let me not be partial, at the same time

I will allow that merit is not always the most prevalent recommendation with the ladies, many possessed with great accomplishments, & a large share of understanding have sacrificed themselves to fellows as little deserving of them, whose only qualifications have been such as should rather render them objects of contempt than esteem. No wonder then if they so soon find just cause to repent their choice.

"Were you fair, but cautious whom you trust,
Did you but think, how seldom fools are just;
So many of your sex would not, in vain,
Of broken vows, & faithless men complain."

Love & religion the two greatest blessings of heaven, seem in the present age, to have shared the same fate: scoffed, ridiculed, and disbelieved by those for whose benefit they were intended. A course of lewdness & debauchery, riot & dissipation, having drowned all relish for the sublime delights that hymen yields, they either contemptuously decline the entertainment, or set down with a taste so viciated, that naught amidst such a profuse assemblage of sweets can please. And then with the true spirit of scepticism, conclude those boasted joys fantastic chimeras, the idle fictions of weak imaginations.— Ungenerous men! shines not the sun tho' unbeheld by blindness? Or is music void of harmony, because it escapes the deaf? These indeed may deserve

our pity, but what shall be offered in excuse for him who wilfully shuts his eyes, & then complains of darkness? or, like the deaf adder, stoppeth his ears, and "will not harken to the voice of charmers charming never so wisely."

"Though fools spurn hymen's gentle powers,
We, who improve his golden hours,
By sweet experience know;
That marriage, rightly understood,
Gives to the tender and the good
A paradise below."

From experience I can indeed vouch the truth of this assertion, no one ever enjoyed a more perfect paradise upon earth, no one was ever more blessed in the choice of a partner in life. She was endued with every perfection that could render a woman truly amiable, the least charm her extraordinary beauty: those who are moved only with the charms of a face & propose beauty as the ultimate object of love will find their enjoyments as unsubstantial, as they are short & transitory; a few years destroys the gaudy colors which animated the picture & leaves the canvas of no estimation; whilst that which took its rise from the beauties of the mind, fixed on a basis no change or alteration can shake, far from suffering any diminution or abatement from time receives additional strength as years improve those charms which first inspired it. Believe me,

when I assured you, after eight years had elapsed since we plighted our vows at the altar, whenever I approached her, my heart beat with the same soft raptures, my bosom glowed with the same warmth of affection, as before I could call her mine; she was ever as studious to oblige, as I was fearful to offend, but you will perhaps be enabled better than by any words I could use to judge of the preceding scene ~~better than by ...~~ by the last affecting one. to this then I hasten. One fine boy about 6 years old was the only produce of our union which by an accidental fall received a contusion of which he died upon the spot. I was greatly concerned at this accident, but Imagine how much more deeply his mamma, who, was an eye-witness to the sad catastrophe. I could not but perceive her affliction, notwithstanding she strove upon every occasion to conceal it from me, lest she should add to mine; whenever she appeared before me, an air of gaiety (which was but constrained) diffused itself over her face, & she assumed a cheerfulness to which she was before a stranger. To divert her attention, I very frequently engaged her in parties of pleasure, and carried her to all places of diversion; she appeared not now to have the same relish she formerly had for them, but imagining they afforded me entertainment, never refused me her company. Time with the assistance of these in some manner eradicated that settled gloom which had taken possession of her mind, but could not alas! repair the ravages it had committed upon her tender constitution. The same vivacity, the same

fourth

sprightly disposition seemed to return, but not with these her accustomed health, this every day sensibly impaired. And here, how cautious was she to give me the least disgust! how anxious to hide from me what was too visible to every eye! But this sollicitude for my repose served only to endear her to me the more, & enhance the value of a treasure I was shortly to be deprived of. I saw her like a beauteous flower, (for she was now in the prime of life) nipt by the devouring worm, droop & gradually die away, whilst it was beyond my power to administer any relief. In fine, the physicians informed us, her continuance here would be but of very short duration. Good God! with what amazing magnanimity did she view the news! She saw my distress, & gently raising herself from her pillow, which I had not for a considerable time quitted, she grasped my hand in hers, & looking at me with an air full of tenderness & triumph thus began.— Ever since that day my dear Evander, which made us one, it has been my most fervent wish, that death by the same stroke at once might transfix us both, or, if this were too much, that I might be the first who retired from life. See indulgent heaven has heard my prayer, with pleasure I behold, & with resignation meet, my approaching dissolution. How few are there who seek to find those tranquil paths we hand in hand have through life! Yet oh! how deserving of their search! since

they not only afford the most exalted pleasures we can partake of in our mortal capacity, but entitle us to everlasting rewards hereafter. A consciousness that I have endeavoured to acquit myself of my duty to God and you; makes me look without the least dismay, on all the terrors of death, it is this that soothes its agonies, & sings a requiem to my departing soul: the only pain I feel is what rebounds from you; but why this sorrow? Can he, who has made it his whole study to guard me from every ill, to gratify nay prevent my every wish, repine to see me so near the haven of eternal rest & peace? — I could only answer by my tears — she proceeded — As, during my life, you never denied me any thing, when dead, refuse me not this last request, & which with my dying breath I ask. — Let not my loss too heavily afflict you! — I know the tenderness of your nature, but bear it as one who rests assured, we part but for a season, soon to meet again & never undergo a separation. — Yet sometimes bestow a thought on her who loved you dearer than her life, & ever employ'd all her's to merit a return: sometimes reflect on those many happy hours we have spent together, when youth & innocency were the soft companions of our joys. — If she would have said more, death, whom even these sweet accents could not bribe to delay, nor the most lovely languishing form to mercy, here denied her further utterance; sinking she threw herself into my arms, & her head rested

upon my bosom. in a few minutes she expired. If there was any thing at this dreadful crisis that could afford the least alleviation of my misery, it was that composure & serenity of mind which accompanied her in her last moments; her eyes in death were fixed on me, & the features of her face contracted into a smile which they retained even after the dear angel had forsook its corporeal habitation & winged its way to heaven.

No. 2.

Friendship has been wisely considered as "the great softner of human anxiety:" were it not for the exhilerating quality of this balm, we might labor under the pressure of ills which we every day produce without much mitigation or decrease. Notwithstanding the christian religion abundantly inculcates the duty and advantage of patiently enduring the mortifications of life, they are so apposite to the prevailing passions of man, that even the strictest adherers to the gospel & its injunctions, are, at times, inclined to lament the disturbance of accidental evils.

I am persuaded that every individual, who is insensible of the spotless recreation of rational converse, & conceives no relish for the soothing endearments of friendship, must be entirely unacquainted with the highest priviledge of mankind; he may boast of felicity in an favorite diversion, & pretend to be transported with the pleasures

of his own amusements, but his taste is obviously inferior to that of prudent beings, who profess an ardour for the benefits of society; their desires after such comfort are derived from the source of everlasting unity, & tend to confirm the mind in truth and rectitude.

But, though we are thus capable of brightening the gloom of time, & viewing our pensive situation, enlivened by the cheering presence of a beloved companion, it is not adviseable to have our affections entirely absorbed in any terrestrial passion; no sublunary inheritance is permanent; even friendship, that effectual cementer of the heart, that sacred union of souls, with which heaven has blessed us, in order to qualify us for a more exalted participation of happiness hereafter, as well as to sweeten the bitter draughts of perplexity; & bear our spirits through the various conflicts of this probationary race, is not exempt from annoyance: death with his merciless spear has destroyed the greatest instances of mutual tranquility, and continues to blast the expectation of numbers, who probably had long indulged the flattering hopes of future serenity, of times wherein they should share the confidence & affection of those, to whom their esteem & love spontaneously tended.

Lysander early proved the uncertainty of this world: and by the loss of his amiable Clarissa, learnt to look upwards, to estimate the riches of earth, by their transient continuance, & to press ardently for the blissful spot whither his dearest treasure was gone, & where the

solacing joys of friendship are perfect & ever durable. In that happy region, the smile of the divine being diffuses immortal splendor, which reflects its glory on all degrees of angelic virtue, and extends the beam of eternal rapture to the remotest corners of the empyrean city. There unity is indissoluvable, there affection recieves strength, and love is nourished in its native soil.

Lysander and Clarissa received the tender impressions of regard for each other in their first perception of the beauty of virtue, and as they increased in learning, and added to their native ornaments, the shining accomplishments of polite education, they became more enamoured with the striking qualities of innocence & truth, and desirous of those inestimable joys that are the unfailing attendants of virtuous friendship.

Clarissa was particularly happy in her person, being blessed with features and complexion that might have vied with the compleatest production of the artist, and likewise possessed the qualifications of her sex to a liberal degree; nor did her mind suffer by these external perfections; she was careful to preserve a disposition equally attractive; the flattery of fops & insinuations of superficial admirers were certain to find discouragement and contempt; instead of parading her beauty at public assemblies, she devoted suitable seasons to the performance of the solemn duties of religion

and, when no material business required her attendance, chose to peruse some of our best theological compositions, the exalted sentiments whereof, she was wont to remark, inspired gratitude & adoration towards the divine goodness: or else to stray thro' the rural walks with Lysander the friend of her youth, whose noble heart confessed the prevalence of godliness, whose genius never shone more illustrious than when employed by religion, morality, or the awful attributes of the almighty Creator.

But alas! earth is not the place for unmolested quiet, whoever imagines to build any perpetual or lasting resource of satisfaction, except that which simply results from the contemplation of a good conduct, & the pleasing consequences thereof, will assuredly fail to accomplish the purpose. It is possible to enjoy the present, but absolutely impracticable to ensure the future, and every project that our sagacity may form, or judgment adopt, for the continuation of pleasures, is both ineffectual and vain, and must at last be referred to the disposal of his will who ordereth all things according to his foreknowledge of their fitness. The necessity of this submission is abundantly evinced in the case of Lysander, for before Clarissa's shining life had reached its meridian, before she attained the perfection to which

her growing virtues aspired, a fatal blast destroyed the expectations of all her admirers: a consumption began to prey upon her health and bloom, and after some months illness & painful struggles with the weakness of human nature, the promising flower was transplanted from mortality and all its depressing languor, to that spot where beauty never fades, and where excellence is rewarded with an incorruptable crown.

The distress of Lysander at this piercing loss, may be easier imagined than expressed: he had often beheld her languishing condition with eyes swimming in sorrow, had often uttered the bitterest lamentations whilst she labored under the severities of sickness, but now, when the shocking scene of departure appeared he no longer retained the man, every faculty sunk beneath the overwhelming flood of despair, all his christian fortitude, every salutary truth that philosophy could bring to his aid, were now too weak to stem the tide of grief.

O the soft commerce, O the tender ties,
Close twisted with the fibres of the heart,
Which broken, break them, and drain off the soul
Of human joy, and make it pain to live.

The only consolation that can be administred to those who sustain the excruciating torture of separation from their maist delight, is the probability of meeting in a ~~nother~~ better world, of this Lysander possessed sufficient to support him, when the extreme of sudden surprise had abated. when his senses were a little freed from the effects of his dear Clarissa's last faultering adieu: she, when reclined on the bed whereon her final gasp was fetched, gave ample hopes to the mournful survivors present, that her conclusion was glorious; I am, said she, about to leave this imperfect state, and to receive the recompence due to my actions therein however gloomy the transition may appear to you my weeping relations, with me it is inexpressibly welcome; I trust through the intercession of my unchangeable redeemer, by whose wisdom I have been enabled to elude the snares of time, & to perform those works, the recollection whereof is pleasant, to enter the mansions of interminated rest: therefore, oh tender friends! & thou dearest partner of my soul, en-deavour to asswage your tears, & let me pass undisturbed from pain & misery to everlasting peace. These accents finished her converse on earth, & they are indelibly recorded in Lysander's mind: they serve as a cordial to cheer his drooping spirit amidst the conflicts of his solitary state.

What happiness the rural maid attends,
In chearful labor while each day she spends!
She gratefully recieves what heaven has sent,
And rich in poverty, enjoys content;
(Such happiness and such unblemish'd fame
Ne'er glad the bosom of the courtly dame)
She never feels the spleen's imagin'd pains,
Nor melancholy stagnates in her veins;
She never looses life in thoughtless ease,
Nor on the velvet couch invites disease;
Her hum spun dress in simple neatness lies,
And for no glaring equipage she sighs:
Her reputation which is all her boast,
In a malicious visit ne'er was lost.

Gays rural Sports.

What virgin had not done as I did?
My modest hand by nature guided,
Debarr'd at once from human eyes,
The seat where female honor lies. Gay's Tales

At every trifle ~~[illegible] affronts do~~ scorn to take offence,
It always shows great pride or little sense;
Good nature & good sense must always join,
To err is human to forgive divine. Pope.

Ink Powder
℞ Gall alep: opt ℥iij
Vitr virid
G: Arabic } a ℥iv
Alum rup: ℥i

'Twas summer & with sultry heat oppress'd
At noon I laid me down in bed to rest
The curtains of my window slightly drawn
Let in a doubtful beam that looked like dawn
Or the faint glimmerings that thro' forrests play,
Or twilight twinkling at the close of day.
Such pretty Masquerades of light and shade,
Suit with the blushes of a wishing maid:
And serve with decency to usher in
Ladies who dread the shame but love the sin.
Corinna lo! appeared in loose array
Adown her neck her comely tresses stray:
Like great Semiramis her figure shewed
Like Lais smil'd as lovely and as lewd
I siezed her gown & broke thro' that defense
(The slender out-work of unguarded sense)

At first she struggled but twas plain to see
She fought for honor, not for victory.
Stript of her robe and naked to my view
How faultless was her make! her shape how true
What arms I saw & felt! what plump round breasts
And how they heaved! as longing to be pressed.
How firm her thighs! how smooth her belly rose
Beneath her slender waste! the rest — suppose
Beauty & youth in their full vigor shone
And close I clasp'd her body to my own
Spent with excess of joy, entranc'd we lay
Give me such noons, ye Gods to every day.

O! ineptias ineptiarum
Ab hoc discite hominem.

Gays Epitaph for himself

Life is a jest; and all things show it,
I thought so once; but now I know it.

To me he came: my heart with rapture sprung,
To see the blushes, when his faultring tongue,
First said, I love.
How vain is force! love ne'er can be compell'd. Gays Dione.

That love alone, which virtue's laws controul,
Deserves reception in the human soul. Anon:

——— 'Tis a fault,
That men, not guided by the tract of reason,
But heat & wantonness of blood, run giddy
To seal such weighty covenants. Shirley's Constant maid

I should prefer a woman that is agreable in my own eyes, & not deformed in that of the world, to a celebrated beauty. If you marry one remarkably beautiful, you must have a violent passion for her, or you have not the proper taste of her charms; and if you have such a passion for her, it is odds but it would be embittered with fears and jealousies.

Good nature and evenness of temper will give you an easy companion for life; virtue and good sense, an agreable friend; love and constancy a good wife or husband. When we meet with one person with all these accomplishments, we find an hundred without any one of them.
Spectator

Marriage enlarges the scene of our happiness and miseries. A marriage of love is pleasant; a marriage of interest easy; and a marriage where both meet, happy. A happy marriage has in it all the pleasures of friendship, all the enjoyments of sense and reason, and indeed all the sweets of life. Spectator

On love of virtue reverence attends,
But sensual pleasure in our ruin ends. Anon:

Gratior & pulchro veniens in corpore virtus. Virg:

———————————— A virtuous mind
More lovely, in a beauteous form inshrin'd.

There is nothing which gives one so pleasing a prospect of human nature, as the contemplation of wisdom and beauty: the latter is the peculiar portion of that sex which is therefore termed fair: but the happy concurrence of both these excellencies in the same person, is a character too celestial to be frequently met with. Beauty is an overweaning self-sufficient thing, careless of providing itself any more substantial ornaments: nay, so little does it consult its own interests, that it too often defeats itself by betraying that innocence which renders it lovely and desirable. As therefore virtue makes a beautiful woman appear more beautiful, so beauty makes a virtuous woman really more virtuous.

Spectator

Of earthly goods, the best is a good wife;
A bad, the bitterest curse of human life.

Ah! what avails it to be young and fair,
To move with negligence, to dress with care?
What worth have all the charms our pride can boast,
If all in envious solitude are lost?
Where none admire, 'tis useless to excell;
Where none are beaus, 'tis vain to be a belle. Lyttleton.

To flow'r-embroider'd vales
From an admiring world she chose to fly;
With nature then retired and nature's God,
The silent paths of wisdom trod,
And banish'd ev'ry passion from her breast,
But those the gentlest & the best,
Whose holy flames with energy divine
The virtuous heart enliven and improve,
The conjugal, and the maternal love. Lyttleton

By titles dazzled, or by wealth misled,
Minds ill-agreeing shame the nuptial bed;
The fair a sacrifice to a sire's command
When forced without her heart to yield her hand,
Beholds the guilty priest with weeping eyes,
Like Iphigenia drest for sacrifice.

Or grant a pair, by mutual vows combin'd
And Cupid's torch with that of Hymen join'd:
Desire that blindly courts the married state
Is far unable to support the weight:
The fabric tott'ring on its scanty base
Sinks on the ruins of a beauteous face.
Or, beauty, tho' it lasts, in time may cloy,
Or that capricious foe to mortal joy,
That nameless something may its taste destroy.

But when the judgment has allow'd its part, Cond

And the clear head directs the beating heart,
The god of love attends the matchless pair,
Tis choice and merit fix the rover there. Jeffreys

The many misfortunes arising to intercept the joys and destroy the peace of conjugal felicity, generally proceeds from our not duly weighing beforehand, in what the comforts and conveniencies of matrimony consist. In order to secure as far as human prudence is capable, happiness in a wedded estate, it is first to be mutually considered, whether the mind of the party we are about to engage with in this important affair, is founded on the principles of virtue; without which the duties of conjugal affection and friendship can never long subsist.

2.dly That riches are not to be looked upon as the only incitement to such an engagement; because when wealth is merely the motive, lasting felicity is not to be expected.

3.dly That the charms of a good face without the beauties of that better part, the mind, should not bewitch us so far, as to entail misery & disquietudes as long as life endures; which is too frequently the case, when appetite is sated.

4.thly It should be the mutual resolution of those, who are about to enter into that state, or are already engaged in it, to confine themselves, according to their station in life, to such sort of pleasures only, which their circumstances will admit of, & which are consistent with the duty of reasonable and virtuous beings. Gent. Magazine

O marriage! happiest, easiest, safest state!
Let debauchees and drunkards scorn thy rights,
Who, in their nauseous draughts and lusts, profane
Both thee, and heaven by whom thou wert ordain'd
How can the savage call it loss of freedom,
Thus to converse with, thus to gaze on
A faithful, beauteous friend?
Blush not, my fair one, that thy love applauds thee.
Nor, be it painful to my wedded wife
That my full heart o'erflows in praise of thee
Thou art by law, by interest, passion mine:
Passion and reason join in love of thee.
Thus, through a world of calumny and fraud
We pass both unreproach'd, both undeceiv'd;
While in each other's interest and happiness
We without art all faculties employ,
And all our senses without guilt enjoy. Haywood

The most abandoned prostitutes are they,
Who not to love but avarice fall a prey:
Nor aught avails the specious name of wife
A maid so wedded is a whore for life. Lyttleton

Reverend and honourable matrimony!
Mother of lawful sweets, unshamed mornings,
Dangerless pleasures; thou that mak'st the bed
Both pleasant and legitimately fruitful: without thee
All the whole world were soil'd with bastardy:
Thou art the only and the greatest form
That putt'st a diff'rence 'twixt our desires
And the disordered appetites of beasts. Middleton's Phœnix

Blest is the maid, and worthy to be blest,
Whose soul entire, by him she loves possest,
Feels every vanity in fondness lost,
And asks no power but that of pleasing most:
Hers is the bliss in just return to prove
The honest warmth of undissembled love:
For her, inconstant man might cease to range,
And gratitude forbid desire to change. Lyttleton

A woman's first care ought to be to win the heart of her husband, and the second to preserve it. She should study his character taste & defects, and conform to his will in all reasonable things.

Happy is the man who meets a wife that is not stupidly silent, nor always prattling nonsense: whose mind is enriched with all useful knowledge, and who has a taste for polite literature. A woman thus accomplished will be always drawing sentences and maxims of virtue from the most judicious authors. She will be mistress of

herself in all changes of fortune, neither blown up in prosperity nor broken with adversity. She will be a chearful & good-humored friend, & an agreeable companion for life.

Such a wife is indeed a jewel of inestimable value; but alas! how few ladies make it their study to be thus amiable & thus agreeable.

The Museum

Think not, the husband gain'd, that all is done,
The prize of happiness must still be won;
And oft the careless find it to their cost,
The lover in the husband may be lost:
The graces might alone his heart allure,
They and the virtues meeting must secure;
Let e'en your prudence wear the pleasing dress
Of care for him and anxious tenderness.
From kind concern about his weal or woe,
Let each domestic duty seem to flow.
Endearing thus the common acts of life,
The mistress still shall charm him in the wife.

Lyttleton's advice to a Lady

The point to which our sweetest passions move,
Is to be truly lov'd, and fondly love.
This is the charm that smooths the troubled breast,
Friend to our health, and author of our rest:
This bids each gloomy vexing passion fly,
And tunes each jarring string to harmony. Lyttleton

In the choice of a wife a man ought to consult his reason always, & never his passions; not that I mean to exclude love, or more properly affection, without which it is impossible that any marriage should be happy; but I would have this tenderness arise from reflection and not from accident; for beauty, that commonly gives rise to hasty inclination, is a very small ingredient among the numerous qualities that enter into the composition of a good wife. Among these I reckon modesty in countenance and carriage, a great fund of good sense, a sweetness of temper equally removed from giddiness & languor, a sincere disposition to make the happiness of her husband her principal study, the management of her family her constant business, & the education of her children her constant delight.

The Musæum

To give society its highest taste,
Well ordered home man's best delights to make,
And by submissive wisdom, modest skill,
With every gentle care-eluding art
To raise the virtues, animate the bliss,
And sweeten all the toils of human life;
This be the female dignity and praise! Thomson

As it is the business & particular interest of women to excel in conversation, and in the amiable decencies of life, and to delight & polish men by their softness & delicacy in speaking as well as acting, they can hardly show those talents to such advantage, except they have

a taste for the beauty as well as propriety of their mother tongue.

Speaking gracefully is of more consequence to the women than they are aware: since the better & most sensible part of our sex are apter to be caught by the ear than by the eyes; and since speech is one of the best instruments of female power, by which they calm the storms of passion & charm our rude natures into a softer kind of harmony.

Decency is the proper characteristic & charm of a woman, as suited to that softer economy & more private life for which she was destined. This consists in a certain elegant propriety and delicacy of manners so well suited to the character of her in whom it prevails, and so discreetly adapted to persons times and places, as to reflect a full image of female softness and modesty.

A strict modesty and decorum of behaviour is the distinguishing charm of female virtue, a quality so essential to the sex, that we always expect to find it; and which, where it is wanting, can be compensated by no charms of nature or art; it is equally admired by the loose and the sober part of our sex; it extenuates many failings & places every good quality in the most alluring light. And though our passion may, yet our esteem never can be captivated, much less secured without it.

Fordyce's Dialogues on Education

The modest virgin, the prudent wife, or the careful matron, are much more serviceable in life than petticoated philosophers, blustering heroines, or virago Queens.

Women are not naturally formed for great cares themselves, but to soften ours. Their tenderness is the proper reward for the dangers we undergo for their preservation; & the ease & cheerfulness of their conversation our desirable retreat from the fatigues of intense application.

Hail source of being! Universal soul
Of heaven and earth! Essential presence hail!
To *Thee* I bend the knee; to *Thee* my thoughts,
Continual, climb; who, with a master-hand,
Hast the great *whole* into perfection touch'd.

Thomsons Spring p. 55

Flush'd by the spirit of the genial year,
Now from the virgin's cheek a fresher bloom
Shoots, less & less, the live carnation round;
Her lips blush deeper sweets; she breathes of youth;
The shining moisture swells into her eyes,
In brighter flow; her wishing bosom heaves,
With palpitations wild; kind tumults seize
Her veins, and all her yielding soul is love.
From the keen gaze her lover turns away,
Full of the dear ecstatic power, and sick
With sighing languishment. Ah then, ye fair!
Be greatly cautious of your sliding hearts:
Dare not th' infectious sigh; the pleading look,
Down-cast & low in meek submission dress'd
But full of guile. Let not the fervent tongue,
Prompt to deceive, with adulation smooth,
Gain on your purpos'd will.

Idem ibid: p. 67

In writing letters we should keep within rules, & support the carriage of a companion to a mistress as far as we can. —

Let flattery be never so apparent, the flatterer never so ill thought of, his praises are still agreable to the fair sex. Surprize their folly!

The frailties of women are to be imputed to the false ornaments which men of wit put upon their folly and coquetry. Platonic ladies are to be dealt with by flattery chiefly, or at least we are not to commend but silently consent to all she says or does.

I should be sorry to live among a people who seclude women from company; yet I hold it becoming in women to live a little in the shade, & to go into company no oftener than will give a more agreable relish to the pleasure of finding themselves again by their own fire sides.

Natural philosophy & history alone form a most agreable & proper study for the sex. To w[illegible] add painting musick and poetry. The only way for the fair sex to please for a constancy is instead of taking up with a round of Tales, or common place thoughts to acquire a stock of ideas whereby the mind may be strengthened and enlarged. From acquired merit arise charms not subject to wither, like the roses & lillies of a delicate complexion, & w. prolong a handsome woman's sway to the very winter of her life: what beauty began, accomplishments of the mind perpetuate. If women value a lasting reign, instead of being only the pageants of a day, let them improve their intellects by a little study & the conversation of men of letters: thus will they secure themselves against solitude the usual lot of old age, & shine in the combined excellencies of both sexes.

——— For nought but love
can answer love, and render bliss secure. Thomson

Who can unpitying see the flowery race,
Shed by the morn, their new-flush'd bloom resign,
Before the parching beam? So fade the fair,
When fevers revel thro' their azure veins. Id:

——— Oft in humble station dwells
Unboasted worth, above fastidious pomp. Id:

Cato solus Act 5, scene 1.

It must be so — Plato, thou reason'st well —
Else whence this pleasing hope, this fond desire,
This longing after immortality?
Or whence this secret dread, and inward horror,
Of falling into naught? Why shrinks the Soul
Back on herself, and startles at destruction?
'Tis the divinity that stirs within us;
'Tis heaven itself that points out an hereafter,
And intimates eternity to man.
Eternity! thou pleasing, dreadful, thought!

Through what variety of untry'd being,
Through what new scenes & changes must we pass!
The wide, the unbounded prospect lies before me;
But shadows, clouds and darkness rest upon it.
Here will I hold. If there's a power above us
(And that there is all nature cries aloud
Through all her works) he must delight in virtue;

Modesty says Madame S— should be retained, even in the moments appointed for loosing it.

Polite literature has immortalized the names of many women among its most splendid ornaments. In France Madame Dacier translated Florus Terence & Homer with very learned notes The marchioness du Chatelet has elucidated Leibnitz & translated Newton with a comment of her own. Her Institutiones Physiques are allowed by all judges to be a work of profound genius. Mademoiselle Scudery gained the first academical crown. The first poetical prize of the Rouan Academy was likewise voted to a lady of that city. The mathematical chair at Bologna glories in being filled by the famous Agnesy & Madam Laura Bassi was lately a celebrated professor of Anatomy there.

And that which he delights in must be happy.
But when! or where! — This world was made for Cæsar.
I'm weary of conjectures — This must end 'em.
(Laying his hand on his sword)
Thus am I doubly arm'd; my death and life,
My bane and antidote are both before me,
This in a moment brings me to an end;
But this informs me I shall never die.
The soul, secured in her existence, smiles
At the drawn dagger, and defies its point.
The stars shall fade away, the sun himself
Grow dim with age, and nature sink in years;
But thou shalt flourish in immortal youth,
Unhurt amidst the war of elements,
The wrecks of matter & the crush of worlds.

— Love such nicety requires
One <u>blast</u> will put out all his fires.
Since husbands get behind the scene
The wife should study to be clean;
<u>Should</u> after marriage, practise more
Decorum than she did before. Swift's Strephon & Chloe
Resistance on the wedding night
Is what our maidens claim by right.

Fair <u>decency</u>, celestial maid,
Descend from heaven to Beauty's aid:
Tho' beauty may beget desire,
'Tis thou must fan the lover's fire:
For beauty like supreme Dominion
Is best supported by opinion:
If decency brings no supplies
Opinion falls & beauty dies. Idem.

Authorities both old and recent
Direct that women must be decent;
And from the spouse each blemish hide
More than from all the world beside. Swift

Unjustly all our Nymphs complain,
Their Empire holds so short a reign;
Is after marriage lost so soon
It hardly holds the honey moon:
For, if they keep not what they caught
It is entirely their own fault.
They take possession of the crown
And then throw all their weapons down:
Tho' by the politician's scheme
Whoe'er arrives at power supreme
Those arts by which at first they gain it
They still must practise to maintain it. Idem

Believe me, it is not in the costly dome, but in the rural cot, that the impartial Lord of all has fixed the chearfull seat of happiness. Health, peace, content & soft domestic tenderness, the only real sweets of life, driven from the gilded palace, smile on the humble roof of virtuous industry. Julia Mandeville v: 1.

Health to himself & to his infants bread,
The labourer bears.

You may talk of women, but you men are as much the dupes of your own vanity as the weakest amongst us can be. Idem

I love her with the fondest passion; friendship is too cold a name for what I feel, too cold for charms like hers to inspire.

Soft as the fleeces of descending snows.

Love when inspired by a worthy object leads to every thing that is great and noble.

In what a false light do we see every thing through the medium of passion!

All cold reserve is banished from that charming bosom; above the meanness of suspicion, she believes my passion noble & disinterested as her own. —

How tasteless are the false endearments, the treacherous arts of the venal wanton, to the sweet unaffected downcast eye of virgin innocence, the vivid glow of artless tenderness, the native vermilion of blushing sensibility, the genuine smile of undissembled love! vol i p 213

The passions of every kind, under proper restraints, are the gentle breezes which keep life from stagnation; but, let loose, they are the storms & whirlwinds which tear up all before them & scatter ruin and destruction around.

Vanity is the moving spring in the female machine, as interest is in the male.

The tender sympathy of pitying friendship is the best balm for every woe.

Such is vain life, and the flight of days,
A still delusive round of fickle joys
A scene of little cares & trifling passions
If not ennobled by the deeds of virtue.

Verum ubi plura nitent in carmine, non ego paucis
offendar maculis.

Horace

An Abstract of Philosophy

Philosophy is a science which explains the nature, causes, Properties & Effects of all created Beings, so far as they are capable of being known by reason, discovered by Art or any way adapted to the human Comprehension.

By the nature of any Being or thing is meant that particular state or condition whereby it is differenced in its kind from all other beings whatsoever; Thus 'tis the nature of God to be perfect, of man to be sociable; Of Fire to be hot; Of Ice to be cold &c:

Natural causes are said to be primary or secondary. The primary cause of all things is God. The secondary causes are those which produce their effects according to the direction & influence of some established & original Laws and Rules implanted in their natures by God the prim-

primary cause at their first creation; of all other causes he is the original Cause; & conseq=:ently they, with regard to the first cause, can be only properly termed secondary causes; So the Sun causeth Vapors; & Vapors causeth Clouds: and clouds condensed cause Rain; rain causeth Springs, Rivers, Vegetation &c: But yet they all act in a secondary manner under the influence of the first cause as aforesaid. There are likewise Final causes, the doctrine of which & of second=:ary causes is of the last importance in true Philosophy: since the latter are the means by which & the former the ends for which, all things recieve their being from the primary efficient cause which is God alone.

The Properties of bodies are those qualities & Operations peculiar to themselves: Thus 'tis the property of Glass to be transparent: of Air and

* The ancients divided philosophy into three general parts viz: into rational, moral, and natural philosophy.

Under the head of rational philosophy they comprehended Logic & Rhetoric; under the head of moral philosophy Ethics & politics, & under the head of natural philosophy mathematics & physics or natural philosophy strictly so called sometimes denominated mathematical & experimental philosophy

Of Natural Philosophy there have been three general Systems

1 The Aristotelian Peripatetic or old Philosophy
2 The Cartesian Philosophy
3 The Newtonian Experimental or new Philosophy —+

and Wind to be invisible: of space to be infinite; of God to do good &c:

Effect is whatever is produced by the operation of any natural cause: Thus vapors are the effects of the Sun's attraction; Ice is the effect of a cold Air; visibility the effect of Light: and Purging & Vomiting the effects of divers Medicines.

Philosophy is generally divided into moral and natural. ×

Moral Philosophy is called Ethics or Morality, the buisness of which is to give Rules & Laws for the behavior, manners & conduct of Man as man or as a rational creature.

Natural Philosophy is called Physics or Physiology; the proper subject of which is substance or matter under all the various forms & Figures we behold it. The design of natural Philosophy is to improve human knowledge & make us better acquainted with nature & Things.

Part

× This branch of Natural philosophy is commonly termed Mechanics

× This branch comprehends what is termed Astronomy

× Otherwise called Pneumatics.

§ called Optics & Acoustics

Part 1st

Of Physics

Physics may be properly divided into four general Parts viz:

1st Somatology, which treats of the common Nature, Properties, & Qualities of Matter & its various combinations in natural Bodies.+

2d Cosmology or Uranology which treats of the nature constitution & component parts of the Universe in general & particularly of the Solar System +

3d Aerology which treats of the nature of the Atmosphere & all the Phenomena thereto belonging + with the nature of Light, Colours & Sounds &

4th Geology which treats of the nature, make parts & Productions of the Globe of Earth on which we live generally denominated Geography.

Axioms relating to Physics.

Axiom 1st Nothing hath no properties.

2d Somewhat doth exist.

3d There is no medium between something & nothing, existance and none existance.

Axiom

Axiom 4th That which doth exist and is independant on any other created being for its existance is properly the essence or substance of the thing existing.

5th No substance or Essence can be produced out of nothing; Or 'tis impossible nothing should be made something. Ex nihilo nihil fit

6th No matter, substance or essence of any thing is capable of being reduced to mere nothing or anihilated.

7th Every effect hath some cause pre-existent to itself.

8th If we ourselves are not the cause of any Effect, then that effect must depend on, and result from some other cause.

9th All things as far as in them is, continue in the same state in which they began their being.

10th Every change is produced from some external cause.

11th That every change made in any Body is always proportionable to the powers of the cause producing it.

Sir Isaac Newton's Rules for Philosophizing.

Rule 1.st We must take care to admit of no more causes of natural things than what are true & sufficient to explain their Phænomena.

2.d We must observe always to assign the same Causes for the same natural Effects.

3.d Those qualities which cannot be increased or diminished, and agree to all bodies in which Experiments can be made, must be adjudged the Properties of all bodies in general.

4.th Propositions and Conclusions deduced from actual Experiments must be esteemed true and accurate notwithstanding any Hypotheses or received Suppositions to the contrary; & must be insisted on till some other Phænomena either rend=:er them more accurate or liable to Exception.

Hypotheses are almost exploded from modern Philosophy, and Experiments introduced in their room; the most common Machines used therefor are.

Telescopes, Microscopes, Barometer, Anemo-
-scope, Æolipile, Areometer, Hygroscope Thermometer
Air Pump Orrery &c: Pyrometer, Lenses, Mirors, Prisms.

Chap 1st

Somatology

§ 1st Of Matter

Matter is the substance or Essence of which all things in the universe consist. the primary constituent Particles, Atoms, or Corpuscles, are the same or of the same nature among themselves, in all the different kinds of bodies into which matter is formed. matter is likewise Finite & limited within certain spaces and Bounds.

Matter and Body are the same, only the latter is used often in the Plural, for the several small Parts & divisions of the common substance of the Universe are called Bodies.

The properties of Bodies are distinguished into those which are common to all alike, & those which

are

are peculiar to each in particular: The first are called Common and Essential, the latter Specific & Accidental. The properties of the first sort are Extention, Divisibility, Solidity, Figurability, & mobility.

The Specific or Accidental properties are, Light, Colours, Sound, Gravity, & Levity, Attraction and Electricity, Transparency, & Opacity, Density and Rarity, Hardness & Softness, Rigidity & Flexibility, Solidity & Fluidity, Heat & Cold, Humidity and Siccity, Elasticity, Odors and Sapors &c.

The ancients reckoned the Elements of bodies were seven viz. Fire, Air, Water, Earth, Salt, Sulphur & Mercury, the modern chemical Philosophers reckon, some five viz: Mercury, Phlegm, Sulphur, Salt, & Earth; Others reduce them to three viz: Mercury, Sulphur, and Salt; whereas in reality there is but One Element of all bodies viz: Substance or Matter.

Extention of Matter is the quantity of Bulk or size into which all the primogeneal part-

× By mathematics is meant that science which teaches the doctrine of number & magnitude & accordingly is subdivided into Arithmetic which has number for its object & Geometry which treats of magnitude

Arithmetic is divided into

1 Common, or Arithmetic of whole Numbers
2 Fractional Arithmetic which is of two kinds
   1 Vulgar Fractions
   2 Decimal Fractions
3 Duodecimal Sexagesimal &c: Arithmetic
4 Algebra, Fluxions &c:

In Geometry the forms & dimensions of bodies are represented by Points Lines Angles Superficies Solids &c

Branches of Geometry, Planeometry Stereometry Altimetry Trigonometry, Surveying, Navigation, Euclid's Elements

primogeneal particles of Matter are distributed or extended in any natural Body & from whence arise the Doctrine of Magnitude and Dimension of bodies or Mathematics. ×

The magnitude of bodies are their Bulk or Quantity of Space which they take up.

The dimensions of Bodies are their Extention in length breadth and depth.

The dimensions of Bodies are by Mathematicians distributed into Points, Lines, Superficies and Solids.

The degrees of Magnitude are infinite and the greatness or smallness of bodies are only relative Terms; as they are compared one with another. Thus a mountain 2 or 3 Miles high is a great one and one not above 2 or 3 Perches high is a small one when they are compared together.

Divisibility of Matter is that universal property or disposition of a body whereby it is capable

capable of being divided ad infinitum as is evident from mathematical Demonstration.

Ductility is that disposition of bodies whereby they are easily drawn out into Length or Breadth. eg. Mr Boyle saith a piece of silk weighing two Grains & a half was drawn out into a thread 300 yards long. & that one grain of Gold may be beat into a leaf of 50 square Inches. Dr Halley has made it appear that 124500 of those very fine skains of Gold used in gilding Silver wire do not in thickness exceed an Inch.

Mr Boyle hath found that one grain of Copper will tinge 28534 grains of Water and Dr Keill hath computed the magnitude of a Particle of Assafoetida to be $\frac{38}{1000000000000000000000}$ parts of a cubic Inch

Solidity is that property whereby a body resisteth all others that press it on every side it

It is sometimes called the figurability & Modificat=
=ion of matter. - The solidity of matter relates even
to the primogenal particles thereof.

Mobility is that essential property
whereby any part of matter is capable of
motion or being moved. Hence motion is a contin=
=ual and successive change of place, as Rest is
a continuance of a body in the same place for
any time.

The cause of motion is an external force
or power applied to any body; which being supe=
=rior to its resistance drives it out of its Place.

Motion is distinguished into absolute and
relative. Absolute motion of a body is real
from one part of absolute space to another.

Relative motion is the change of place with
respect to some other things at Rest. Hence a
Person

Person may be relatively at rest, who yet is really and truly in absolute motion, e.g. Sailing in a Ship

The general affections of motion are three

1 The Celerity or Velocity
2 The Quantity and } Motion
3 The direction of

The celerities of bodies to each other are as the spaces thro' which they pass; the quantity of motion is the quantity of matter moved. Thus if a body hath 2 parts of matter & 6 degrees of Velocity, the motion of that body will be 12. This quantity of motion is by mechanical philosophers called the momentum or force of Motion.

The direction of motion is a right line drawn towards the place the moving body tends. motion is likewise said to be simple or compound.

On these different properties of motion depend the whole Theory of Mechanics.

Of

Of Mechanics

By mechanics we mean that branch of natural philosophy which explains the Laws of motion & the doctrine of what are commonly called the mechanic powers.

The 1st general Law of motion in bodies is that all bodies have a natural tendancy to move in straight lines. The 2d being a consequence of the former is that bodies impelled by two powers in opposite directions move in a diagonal of the square of their projectile forces.

The two powers that take place in the motion of all bodies are called the centrifugal and the centripetal forces. The centrifugal force is that power which projects or throws a body off from the centre; the centripetal force is that which attracts or draws a moving body towards the centre

The mechanic powers are generally reckoned six in number viz. 1 The Lever 2 the wheel & axle 3 the pully 4 the inclined plane 5 the wedge 6 the Screw

Of Optics

Optics is a science, which treats of Light with all the phenomena and properties thereof

Light is that quality of certain Bodies whereby they become visible to us & render others so, the manner in which light is supposed to affect our Eyes is by a very fine etherial matter vastly rarer or finer than that of Air, which is the medium by which the Rays of those luminous particles are transmitted in strait lines to our Eyes

The motion of light is progressive and not instan-taneous as the antients thought, this is proved by Eclipses of the Satellites of Jupiter, by which tis found the velocity of Light is 180000 Miles in a second of time, and as tis found that a Bullet discharged from the muzzle of a Gun flies a mile in about 8½ seconds & therefore would be 32½ years in arriving

to

to the Sun; hence the proportion of swiftness in a cannon Ball and Light is as 1 to 1530000 nearly.

Light is not only found to be a body but it is also found to consist of rays tinctured with all the original colors in nature in the following order from rays less refrangible to those that are most so viz. Red, Orange, Yellow, Green, Blue, Indigo and deep Violet. The other affections of Light are its Reflexibility and Refrangibility, these make the subjects of Catoptics and Diaptrics wch are the two great parts of the most curious and delightful science of Optics.

1.st Of Catoptrics

Catoptics is the science of Reflex Vision, or that which is performed by rays of Light reflected from the polished surfaces of Mirors of every sort of which there are three very considerable viz

1.st

1st Plane Mirrors or Looking Glasses, the chief properties of which are that all Objects are represented in their Images just as far behind the Mirror as they are really before it; that they appear situated on the same side; and lastly that the Images are in all respects alike and equal to the Objects in Magnitude.

2 Convex Mirrors, or such whose surface is spherically round, by these mirrors all Object appear behind the Glass, their Images all erect and less than the Object, the rays parallel diverging or converging according to the distance of the Object &c.

3 Concave Mirrors or such as are spherically hollow on the polished surface or that next the Eye on which the rays falling are by reflection made to converge or intersect each other, and parallel rays are converged to a point at the distance of half the Radius before the Glass, from which property it is

easy

easy to understand how they become Burning Glasses by collecting the rays of the sun into a very small space called the Focus of the Glass

2.d Of Dioptrics

This part of Optics considers the nature of Vision by rays of Light refracted thro' different Mediums but principally thro' Glass in those forms we call Lenses.

Of Lenses there are 5 different sorts viz. 1 Plano-convex 2 Double convex 3 Plano-concave 4 Double concave 5 Convexo concave, this Lens is usually called a Meniscus., From the nature of Lenses in general we may understand the Structure and effects of Dioptic Machines; as the Microscope Telescope, Camera Obscura & Magic Lanthorn.

The Law of the reflection of Light is invar:iable its Angle being always equal to that of its incidence. The Law of the refraction of Light is that

that the Angle of Incidence is to the Angle of Refraction as 4 to 3 in Water; and as 17 to 11 in Glass.

Of Colours

Color is that which ariseth from a certain quality of Bodies whereby they are disposed so to modify and reflect the Light falling on them and striking on the Organ of Sight as thereby to occasion or produce the sensation of Colour in our minds: the origin of colors proceeds originally from the rays of Light; for in them are contained all the primary original and absolutely pure and unmixed Colors which are in number seven 1 Red 2 Orange 3 Yellow 4 Green 5 Blue 6 Indigo and 7 Violet. of different degrees of Refrangibility as is evident from an Experiment for w.c see Martin or Dictionary of Arts & Sciences

Of Acoustics

Acoustics is the science of sound or hearing explaining all the properties thereof otherwise call'd Phonics.

Sound is the Undulatory motion of the Air excited by the percussion of any body and propagated in concentric spheres all around the said body; w.c undulations of the Air beating on the Tympanum of the Ears convey by the nerves this sensation to our minds.

Air is proved to be the medium of sound by an Experiment of a Bell in the receiver in an Air Pump.

M.r Durham has found by Experiment that the mean Velocity of sounds is at the rate of 1142 Feet in a second of time or a mile in 4½ seconds and therefore would take up 17½ Years in passing from the Earth to the Sun w.c is near double the velocity of a Bullet at its first discharge from a Cannon. Sounds are said to have been heard at the distance of 180 or 200 Miles.

The Civil Law divided into Private & Public Law

The private Law consists of two parts

1 Engagements 2 Successions

Engagements & their Consequences are of 4 kinds

1 Voluntary & mutual Engagements by Covenants, as
1 Sale, 2 Exchange, 3 Hiring & Letting to Hire
4 Loan & Usury 5 Deposition & Sequestration
6 Partnership 7 Dowries 8 Donations 9 Usufruct
10 Services 11 Transactions 12 Compromises 13 Proxies
Mandates & Commission 14 Public Traders their
factors & Agents. 15 Bills of Exchange 16 Brokers

2 Engagements formed without a Covenant, as
1 Tutors, 2 Curators, 3 Syndics Directors & Adm^rs.
4 Managers, 5 Damages Costs & Interest 6 Accidents
7 Things done to defraud Creditors.

3 Consequenses wch add to or strengthen Engagements
1 Pawns & Mortgages 2 Separation of Goods
3 Solidity 4 Cautions or Sureties 5 Restitution
6 Proofs 7 Prescription.

4 Consequenses which annul or diminish Engagements
1 Payments 2 Compensations 3 Novations
4 Delegations 5 Cession of Goods 6 Discomfiture
7 Rescission of Contracts & Restitution of Things

Domat on the Civil Law

Successions are
1 Legal, 2 Testamentary
1 Of Successions in General
1 Heirs 2 Executors, 3 Inventory 4 Partition among Coheirs 5 Renunciation
2 Legal Successions or Succession of Intestates.
Order of Succession, Descendants, Ascendants Collaterals — Collation of Goods.
3 Testamentary Successions.
1 Of Testaments 2 Undutiful Testaments and Disherison 3 Legitime or legal portion.
4 Dispositions of those who have married second time
4 Of Legacies
1 Codicils 2 Donations in prospect of Death
3 Legacies 4 The Falcidian Portion
5 Substitutions & Fiduciary Bequests
1 Vulgar Substitutions 2 Pupillary Substitutions
3 Direct & Fiduciary Substitutions 4 Of the Trebellianic Portion. vid: Domat

Preliminary Book contains 3 Titles
1 The Rules of Law in General, use & Interpretation
2 Persons, contains 1 their State by Nature 2 by the Civil Laws
3 Things & their distinctions 1 by Nature 2 by the Civil Laws

Persons by nature are distinguished by,
1 Sex 2 Birth, lawful Issue, Bastards, Still Born Children,
Abortives, Posthumous Children, Hermaphrodites,
3 Eunuchs, Madmen 4 Deaf & Dumb, 5 Monsters 6 Age

Distinctions of Persons by the Civil Laws are
1 Slaves 2 Freemen 3 Manumised persons
4 Emancipation of Children 5 Minors & Majors
6 Subjects & Strangers 7 Civil Death. 8 Clergymen
9 Communities

Distinctions of Things by Nature
1 Things Common to all 2 Things public
3 Moveables & Immoveables 4 Trees & Buildings

Distinctions of Things by the Civil Laws
1 Articles of Commerce 2 Things consecrated
3 Corporeal & Incorporeal 4 Allodial Lands & Quit Rents &c
5 Mines 6 Coin, 7 Treasure 8 Purchase, 9 Inheritance
10 Paternal Estate 11 maternal Estate

Domat on the Civil Law

Domat says, all Laws derive their origin from those first principles which are the foundations of Civil Society, & that the Laws of Nature are the foundations of the whole Science of Law. p: 68

There are three sorts of troubles which disturb Society 1st Law Suits, 2d Crimes, 3d Wars.

Domat

De Legibus Suarez reduces all the rules for the just Inter-
§4. :pretation of Laws to three (viz.t) Verba Legis,
Ratio Legis, Mens Legislatoris; (See Dr. Blackstone's
Essay on Collateral Consanguinity in his Law Tracts)
Domat says its necessary sometimes to consider not
1 Vol: what a Law says but what it means, & to judge by
its meaning how far it ought to be extended & what are
the bounds wch. ought to be set to its sense.
Redhibition is the taking back of the thing sold
80 for some fault in the sale or thing sold
Emphyteutical Leases are leases of Perpetuity or
107 for a very long term of years as Quitrents & Ground rents
Loans are principally of two kinds
110 1st. of things to be restored in Specie as a Horse, Plate,
& called Commodatum
2d. of money, grain, & other things to be restored in
kind called Mutuum.
Usury by the Civil Law is Int. rec. for money lent.
Domat condemns it as unjust iniquitous & contrary to the
Laws of nature & religion
Tutors were only given to males under 14 & to
females under 12 wch. were the ages of Puberty at wch. time
252. Tutorship ended & Curators were assigned them until
they attained 25 years wch. was full Majority.
In France the Tutors continued until 25 years
There were both Onerary & Honorary Tutors
274 Curators were also given Prodigals Madmen &c:

Domat vol: 297 He who recieves money, through mistake or otherwise, not due to him is obliged to restore it.

Unlawful Acts are not only those which are prohibited by some express Law, but all those

299. w.ch are contrary to Equity, honesty, or good manners, altho' there be no written Laws w.ch makes mention of them. For whatever is contrary to Equity, honesty, or good manners, is contrary to the Principles both of Divine & human Laws

Whatever Debtors do to defraud their Creditors

323 is void

The word Pawn is properly applied to moveables put into the hands & keeping of the Creditor for the security of his Debt

Mortgage is a right acquired over Immoveables

330 without possession

He who having Mortgaged a piece of Land to one Creditor afterwards mortgages it to another, without

336 giving notice of the first Mortgage, commits an offence called Stellionate

358 3 orders of Creditors 1 Privileged, 2 on Mortgage, 3 on Bond or Account, called personal Debts

358 Substitution or Assignment of Debts

363 The prescription of the Debt extinguishes the Mortgage.

Hypothecary Action extinguished only by a prescription of 40 years - personal Action sooner, in 30 years

Civilians distinguish between pensare damnum and prestare quod interest. for breach of contracts

Domat
1 vol. 369 *Solidity* among Debtors is the Engagement which obliges every one of them to the Creditor for the whole debt.
371 The Debtor that pays the *whole* has his remedy against the others for their proportions
377 The *Surety* cannot be sued till after the discussion of the principal debtor
395 *Justinian* ordained that the Interest of money lent should never exceed the value of the principal
415 Proofs are of 5 kinds. Writing, Witnesses, Presumptions, Confession of the parties, & an Oath.
416 *Judicial proof* is the way w.ch the Law has prescribed for discovering & establishing with certainty the truth of a matter of fact that is contested.
418 In all kinds of proofs the question whether the fact *is* proved or is not, is determined by the Judge by *two* sorts of discussions, 1 whether the *formalities* of the proofs are according to Law, 2 whether they are *concluding*
426 There must be *two* Witnesses to make a proof
When other proof cannot be made, it may be referred to the Oath of either party, w.ch is called a *Decisive Oath*
450 Demands of *Possession* must be within a year
461 *Prescription* in moveables acquired in three years
In immoveables the fair & honest possessor who had a title, prescribed by a possession of 10 yrs. about 20 years. He who possessed without
462 a title prescribed by a possession of 30 years
Criminal Actions were prescribed in 30 years
Mortgages or Hypothecary actions in 40 years

× The Heir or Executor who accepts the Inheritance, & does not take the benefit of an Inventory, is bound indefinitely & without distinction for all the Debts owing by the dec.d, & for all the charges of the Inheritance, whatever sum they amount to, & altho' they exceed very far the value of the Goods of the Inheritance.

Domat 464 Prescription is a manner of acquiring & loosing the right of property in a thing by the effect of time

Money or Goods given, a payment

480 Delegation, is a payment

Assignment of a debt payment

Novation is a payment

Debtor's decisive Oath payment

Payment first applied to the discharge of Interest

Compensation is a reciprocal acquittal of Debts,

488 between two persons who are indebted the one to the other. It is called stoppage & offset in our Law

Delegation is the change of one Debtor for another

Cession of Goods is the surrender wch the debtor makes of all his Estate to his Creditors

Discomfiture the same as Insolvency

Of Successions

Successions are either Legal or Testamentary

The order of Legal Successions threefold, Descendants, Ascendants, Collaterals

524 The Roman Law gives a general & indefinite Liberty to dispose of Estates by Will — not so in France

The Heir or Executor may either accept of the Succession or refuse & renounce it. He may deliberate 100 days.

The right of partition of Accretion & of Collation of Goods, belong to the Coheirs

× The Heir or Executor, if he accepts, is answerable for all debts & legacies whether the Inheritance be sufficient or not, unless he accepts with the benefit of an Inventory; in wch case he is only answerable to the Amt. of the Inventory

In England if Ex.r or Adm.r exhibits an Inv.y on Oath he is no farther answerable than for what is contained in the Inv.y, unless the Creditors or Legatees can prove that there are more goods belonging to the Succession than what are set down in the Inv.y; in w.ch case the Ex.r or Adm.r will be obliged to charge himself therewith. But if he refuse to bring in Inv.y, he is chargeable with all the Debts & Legacies, altho' there should not be effects sufficient to pay them

3 Swinb. 5.7

If there are several Ex.rs & one renounces, & the others take upon them the Executorship; he who renounced may, at any time during the life of his Co-Executors, retract his Renunciation & administer the goods jointly with the others, but after their death he cannot retract. Swinb:

The Right of <u>Accretion</u> in the Civil Law is the same as the right of <u>Survivorship</u> in the Common Law of England.

<u>Domat</u>

577 Creditors who have neither Mortgage nor privilege for their Debts, come in, share & share alike, if there are not good enough to satisfy the whole Debts.

Inventory ought to be made publicly & contain all

597 the Goods of Ex.r or Heir or answerable for their value & must render an Account —

Males under 14 & females under 12 cannot make a Will.

Domat. 2v:18. 7 witnesses to a will — Heir or Executor cannot be a witness.

Right of Accretion is where the right of two falls to one.

Right of Transmission where Heir or Ex.r accepts he transmits the succession to his heirs or Ex.rs

If 4 Children or under, the Legitime is 1/3, if more 1/2 —

191 The Falcidian Portion is the fourth part of the goods after debts paid, which the Ex.r may retain out of the Succession for himself

Vulgar Substitution is bequeathing a thing with limit.n to certain persons

Pupillary Substitution is a disposition that if a child under, dies before he comes of age, another person is substituted to take his place or portion

One may make a Substitution or Fiduciary Bequest of any thing. Fiduciary Bequest is a bequest in trust for another

The Trebellianic Portion is the fourth part of the Inheritance w.ch ought to rem.n to the Ex.r who is charged to restore it

Undutiful Testament. Preterition. Disherison.

Preterition is the not mentioning a Child in a Will

2 Domat 114 A Child born after making a Will, tho' not mentioned therein, yet shall come in for his Portion

1 Of the Several ways of terminating Differences.
3 ways of ending Disputes, Agreement, Arbitration, & Suit at Law. The first, voluntary agreement, is called a Transaction. 66
The second a Compromise or Arbitration

2 Of the Several sorts of Judicial Actions. 67

Actions are either Civil or Criminal. They are likewise divided into real, personal, & mixed. Into Confessory, Negatory, Hypothecary, & possessory Actions.

3 Orders of Judicial proceedings

1st Step is the Summons or Citation; this must be in form of a libel, that is, contain the substance of the plaintiff's demand, & must be served personally on Deft., if to be found

If Deft. dont appear within 8 days after the return of the process, the plaintiff may take his Default or Silence, but cannot have Judgmt. until 8 days or 2 weeks after; and where a Judgmt. is had without a defense, the Deft. may take Exceptions to it within 8 days after

2d. If the Deft. appears either in person or by Proctor, he makes his Defense. Defenses are Declinatory, Dilatory and peremptory.

In the Contestation of suits two questions arise. 1st The truth of the fact. 2 The Consequences which are drawn from it; or a question of Fact & question of Law.

There are two ways of giving Judgment. One upon a summary hearing, the other after pleadings in writing

Any person interested in the event of a suit may have liberty to come in as a party or intervene as plaintiff or Defendant; this is called the Right of Intervention.

Recusation of the Judges.

2 Domat The party who suspects a Judge upon good grounds which are well proved, may Recuse or challenge him, i, e, may hinder him from taking Cognizance of the matter in dispute

Proof is made by Written Evidence, by Witnesses, by confession of the parties, & by the Oath of Decision; when one of the litigants not being able to prove his charge offers to stand or fall by the Oath of his adversary; which the adversary is bound to accept, or to make the same proposal back again, otherwise the whole shall be taken as confessed by him. Something like this takes place in the English Law in what is called Waging of Law.

The Decisive Oath, even in the Ecclesiastical Courts of England is now obsolete.

In the progress of the suit the parties may be examined personally, or upon Interrogatories.

Peremption is a discontinuance of the suit by a lapse of 3 years. The party may nevertheless begin a new Instance or Suit, unless the Action is prescribed by length of time.

Sentence is what the Judge decrees in the cause. The Decree is either Interlocutory or Definitive.

After definitive Sentence comes Execution.

× The person cannot be Arrested in Execution only in such actions as are called privileged.

Execution is either upon Moveables, or it is upon Immoveables, or an Arrest of the person. ×

4 Proceedings on Appeal

2 Domat. An Appeal is a legal remedy, which the Law gives to suitors, whereby they may have a Sentence, wch they conceive to be unjust, reheard by a Superior Court.

The Appeal must be entered within 10 days after the date of the Sentence.

In an Appeal the Judge may determine both the grievance & also the principal cause.

In an Appeal one may plead new matter, have his adverse party examined on interrogatories, produce Witnesses, make new demands if not different in their nature, & in general he may do every thing that may tend to inform the Judge more fully touching the merits of the principal cause that has been decided in the first instance.

There may be an Anticipation & Desertion of the Appeal.
Letters of Anticipation of the Appeal is a process taken out by the Appellate or Deft in Appeal to hasten the determination.

Desertion of the Appeal is where the Appellant neglects to prosecute the Appeal for a certain time.

Domat

The treatment of prisoners of War has varied according to the degree of perfection human reason has gradually attained. The most civilized nations ransom them, exchange or restore them at the conclusion of a war. Nations that are not yet completely civilized, claim them as their property & make them Slaves. The common savages massacre them without putting them to torture. The most savage people of all, torture, kill, & eat them. This is their Law of Nations.

Abbé Raynal 3 p: 141

There are numberless political errors, which, once adopted become principles. Ibid: 247.

In the organization of Civil Society, Domat says
1.st Act is the establishment of Government in General
2.d Appointment of public Officers for Administration
3.d Treats of Crimes 4th Judicial Proceedings

Adm.n of Justice consists in punishing Crimes & Offences & deciding of Law Suits 2 Domat 546.

Judges Advocates & Proctors necessary in Courts of Justice. — Divided into Courts of Appeal & no Appeal. 547

Parliaments of France have power to make Rules & orders for speeding Acts of Justice — 560.

2. Public Officers are, Officers of Police, of Revenue, and of Justice.

3. Crimes & Offences. By the word Crimes is understood high misdeeds, by Offences less ones. 629

Crimes in the Roman Law are either public or private. Public as Treason, Peculation, Forgery, Adultery &c. — Private as Injuries Libels, Thefts, Stellionate &c: Public mostly called Crimes, Private Offences. 630.

4 Lawsuits. Civil Suits, mode of prosecution. Judgment. Appeal. Appellant & Respondent

Criminal Suits. If Criminal confess a Capital Crime he shall nevertheless be tried before he is condemned 658.

Syllabus of Dr. Priestley's Lectures on Law.

General Division of the Subject

1 The Civil
2 The Ecclesiastical } Constitution & Laws

The great objects of civil policy.

1 Those institutions which tend to make the State happy & populous at home
2 Those which tend to make it formidable abroad.
3 The manner in which the Expences of Government are defrayed

Internal Police of the State

1 The Legislative power
2 The Executive power
3 The Laws of the State
4 The method of proceeding in the Courts.

Laws of the State are

1 Those which are of a public & more general nature
2 Those which respect the mutual obligations of Individuals.

To the former head belong

1 Those whose immediate object is the preservation of the Government itself.
2 Those which relate to trade & Commerce &c.

To the latter head belong

1 The Laws made to guard our lives, limbs, liberty, reputation, & property, real & personal.
2 Those which relate to the commerce of the Sexes & the domestic relations

After the Laws respecting Natives, comes those respecting Aliens

After Laws the business of Equity will be explained.

Lect. 1 Division of the Country, & of the People. — Counties — Hundreds. — Tythings. Dioceses. Parishes.

The King & the Order of the Court — Order of succession to the Crown — Style and ceremonies in attending upon him. Titles.

Threefold order of the British Court — Civil order. The Lord Steward. His Court & Jurisdiction. Officers under him — The military Order. The band of Gentlemen pensioners. Their Captain, & other officers under him. Yeomen of the Guard. Troops of the houshold. The horse & foot guards. The Ecclesiastical order of the Court. The Chapel royal & its Dean. The Sub-dean, twelve priests, & chapel Clerk &c: Chaplains in Ordinary — The Lord Almoner — The Civil list revenue.

Lect. 2 — Queen Consort — Queen Dowager — The Prince of Wales. The younger branches of the royal family.

The Nobility. Peers by Creation, Descent, & prescription. Dukes, Marquises, Earls, Viscounts, Barons. Titles. orders of precedence. privileges.

Lect. 3 Of the English Gentry. Baronets. Knights bachelors. Knights Bannerets. Esquires. Gentlemen.

Of the Commonalty. Yeomen — their privileges —
Of the order of the Garter. Knights of the Bath —
Earl Marshall. The antiquity & use of Coat-
Armour. The king at Arms. Garter. Clarencieux.
Norroy. Their several offices. The six English
Heralds & the Brunswic herald. The pursuivants.

Lect. 4 Of the supreme Legislative power in the
State as lodged in the King & two houses of Parliament
Members of these houses — qualifications —
&c: as in (Bl:)

Lect. 5. Of the Supreme Executive power of the
State. Power & prerogatives of the King in domestic
& foreign affairs — In what sense he is the
fountain of Justice, of honour, of office, of privilege,
& the arbiter of domestic commerce

The Privy Council — president of the Council.
Cabinet Council. The two principal Secretaries
of State. Signet Office — paper Office —
privy Seal — great Seal — Lord Chancellor
keeper of it — of passing Grants &c —

Lect. 6, The power of Administring the Law — The nature of Courts of Justice — Courts of Record & not of record. The Office of Judge — Serjeants Barristers. Registers. Attorneys at Law — The Kings Attorney General. Sollicitor General — The separate power of the house of Lords & Commons as Courts of Justice — Court of Chancery. Its twofold Jurisdiction. The ordinary or legal Court — The Court of Equity. — twelve Masters. Master of the Rolls.

Lect. 7, Court of Kings Bench — Judges — Authority — Its power over Inferior Courts. Division of the Court of Kings Bench into the Crown side & plea side. Court of Common Pleas. Court of Exchequer.

Lect. 8, Of the Inferior Courts of Justice. The Court of Assises. The Circuits & The Quarter Sessions. County Courts. Hundred Courts Courts Leet.

Lect. 9, Courts of particular & limited Jurisdiction.

Lect. 10, Magistrates who Act in an Official capacity in the administration of the Laws. Sheriffs Bailiffs. Jailors — Justices of the Peace. Coroners Constables. Penalties for negligence or oppression.

Lect. 11, Of the several denominations of Laws used in England — Common Law. Statute Law. Equity. Civil Law. Canon Law.

Laws of a public Nature.

First, of those Laws w.ᶜʰ have for their immediate object the preservation of the Government itself — Treason. Stat. of Edward iii — Trials of high Treason. Punishment — Other Offences — Riots. Routs an Affray.

Sect. 12, Laws which respect public Trade & Commerce. Fairs. markets — of Toll — Sale in open markets. Forestalling, regrating, engrossing — monopolies. Of Apprentices — poor Apprentices — Laws to prevent Smuggling.

Sect. 13, Regulations concerning the Coin — What Coin is current — Counterfeiting — Regulations of Weights & measures — Laws concerning Bankruptcy. The famous Navigation Act — Post Office — Trading Companies East-India Company — Turkey Company — Merchants Adventurers. Russia Company. Eastland Company. African Trade. Board of Trade. Foreign Consuls.

Sect. 14 Laws providing for the public health. Selling unwholesome provisions — plague —

Laws concerning matters of public convenience — Highways — Poor — Settlements. Houses of Correction

Lect. 15. Laws relating to the conduct & mutual obligation of Individuals in the Society
1st For security of Life — Self-Murder. Penalty. Murder. Duelling — Manslaughter — Stabbing — Chance medly. Death per Infortunium. Deodands. Se defendendo. Cases of Justifiable homicide
Lect. 16. Security of our Limbs — maiming — Battery & Assault
Laws in favour of personal Liberty.
Kidnapping — Habeas Corpus — Unlawful Imprisonment
Laws which tend to secure Men's reputation. Actions for words. Libels — Observations on them.
Lect. 17. Security of Property real & personal. — Of Tenures &c: to Lect. 32, nearly as in Blackstone. Of Injuries which may be done to real property & the Remedies to Lect. 35.
Lect. 35. Laws for security of personal property or Goods. Of Larceny — Robbery — Houseburning — Burglary — Piracy — Accessories to Crimes — Benefit of Clergy &c: to Lect. 38 inclusive.
Lect. 39. Of Contracts. Bailment. Hiring & borrowing. Interest or Usury — Insurance

Lect. 40, Of Debts. Debts of record – Recognizances. Debts upon Bond. Action of Debt – Debts upon simple Contract. Bills of Exchange – Inland Bills. foreign Bills. – Protest & forging Bills.
Lect. 41, Of Wills & Testaments
Lect. 42, Of the Office & Duty of Executors
Lect. 43, Of Legacies. Of Administration.
Lect. 44, Laws relating to the Commerce of the sexes. Rapes. Forceable marriage or Defilement – Buggery. Fornication. Stews. Bastards.
Lect. 45, Of Marriage. Polygamy. Laws respecting husband & Wife – Adultery – of Divorces. Estates by Courtesy – Dower – Jointures.
Lect. 46, Parents & Children – Guardians – Masters & Servants. Of Petty Treason.
Lect. 47, Method of proceeding in the Courts of Justice. Actions, criminal or civil, real, personal or mixed. – Writ – Arrest. Bail. Declaration. Pleadings – Trial. Jury. verdict. Judgment. Execution to Lect. 52.
Lect. 52, Proceedings in Criminal Cases. – Prosecution Arraignment. Trial. – Evidence. verdict – Judgment. Execution. Pardon. to 55.
Lect. 55 Laws respecting Aliens. Naturalization

Lect. 56, Of Equity. Reasons for Courts of Equity drawn from the nature of Civil Society & of Laws. Difference between Law & Equity — Courts of Equity governed by rules. As safely depended upon as rules of Law. 14 maxims of Equity explained by select cases from Harris's treatise on that subject.

maxim 1 He that will have equity done to him must do it to the same person &c: — Appeals from Chancery. method of proceeding in Chancery.

Lect. 59. Institutions &c: tend to make England formidable abroad — Army — Navy — Court of Admiralty — National Militia —

Lect. 63 Manner in which the Expences of Government are defrayed — Revenue — Taxes — Customs — Excise — Funds &c:

Taxes upon possessions & Consumptions.

Sketches of Civil Philosophy, or Jurisprudence

Lord Bacon comprehends all human know=
=ledge or Literature under the three general heads of History, Poetry & Philosophy corresponding to the three leading faculties of the human mind, Memory Imagination & Reason.

Historic science is founded on facts and events, Poetry on fancy & invention & Philosophy on the nature & properties of beings.

Beings are either immaterial or Spirits, or they are material or bodies.

Bodies are either mere corporeal substances or they are beings endowed with reason & understanding.

That branch of Philosophy which treats of the nature & properties of immaterial beings or spirits is called Metaphysics; that which treats of the nature & properties of corporeal substances is called Natural Philosophy, & that which treats of the conduct & actions of rational beings or the human species is called Moral Philosophy.

The actions of mankind as rational beings are to be considered as they respect individuals & the relations & connections formed by them in a state

of natural Society, or as they relate to our conduct & behaviour in a state of civil Society. The former is the object of Ethics or moral Philosophy strictly so called, the latter of Jurisprudence or civil philosophy. Jurisprudence therefore is a moral science, which comprehends, not only the knowlege of the various forms of Government & the positive Laws & institutions of States or civil Societies, but those immutable principles of reason & natural Justice which are the foundation of all Law, & the application of those principles to the police of States, & the Administration of Justice.

As the limits I have affixed to Civil Philosophy in the Scale of universal Science includes every species of Law & Jurisprudence, it is necessary to take a view of the nature & various kinds of Law.

Law applied to the nature of rational beings is a rule of action, prescribed by a superior, and which those in subjection are obliged to obey.

Two things are essential in every Law, 1st. Power in the superior to prescribe the Rule, 2d. Obligation on the subjects to observe it.

All Laws are either Divine or Human.
Divine Laws are either Natural & discoverable by the exercise of our reason & the dictates of Conscience, or Revealed to us in the sacred writings.

The Laws of Nature are obligatory on all mankind, at all times & in all places; and the revealed Law is equally obligatory on all to whom the Deity hath been pleased to extend the light of revelation. Both together form that immutable basis of rational Law, upon which all human Laws are built, with which all human institutions ought to correspond, & from whence they derive their intrinsic authority & obligation.

Human Laws are either such as relate to all mankind, & are adopted by all civilized nations, & therfore called the Law of Nations; or such as relate to the Constitution & Government of particular States, & called Civil Laws.

The Law of Nations is either natural & necessary, founded on the principles of the Law of Nature applied to the conduct & affairs of nations; or it is positive & voluntary, arising from the tacit or express agreement & practice of Independent States.

Civil Laws are the rules established by public authority to be observed by all the citizens of the State for which they are made. Some English writers use the words Municipal Law as synonimous to Civil Law.

The Roman Jurists divide their System of Jurisprudence into the Public & Private Law.

Under the head of public Law they comprehend not only the Law of Nations, but that part of internal polity which relates to the constitutional frame of Government & the rights of Magistracy. This latter branch of public Law is by Vattel called the fundamental Laws of a State, & by Burlamaqui & others Politic Law.

Under the head of private Law Civilians comprehend all Laws which regulate the rights, conduct, & mutual intercourse of private citizens with each other.

Every independent State claims a right to make such Laws for its Government as it sees fit; there must therefore be as great a variety of human Laws as there are different forms of Government or different sentiments & humors in Legislators.

Amongst the multiplicity of positive Institutions which have prevailed in the world I shall only take notice of 4 Systems of Law which from their extensive influence, usefulness, or connexion with our Jurisprudence, are of more immediate consequence to us. These are the Feudal, the Canon, the Roman & the English Laws.

The Feudal Law owes its origin to the northern nations who overran the Roman Empire, and was generally established over all Europe between the seventh & eleventh centuries, & continues to this day a part of the Jurisprudence of all European States.

The Feudal System is founded on military subordination, & its leading principles consist in the tenures by which Lands are holden, & the rights & duties of Lord & Vassal.

Before the Feudal doctrine was generally known in Europe, the property in Land both in the Roman Empire & elsewhere, was free & absolute. The owner had the entire right of property & dominion in

himself

himself, which he could dispose of at pleasure, or transmit as an Inheritance to his Children. This absolute right of property in Land is called Allodial in contradistinction to the conditional tenures introduced by the Feudal Polity.

By the Feudal Law all Lands are held of a superior. Feudal Tenure was originally at the will of the Lord, or during pleasure, & was then called Beneficium, the dominium or property being in the Lord, & the usufruct only in the Vassal; by degrees it was extended for life, when it acquired the name of Fief, Fee or Feud, at length it became hereditary.

The Feudal Law was first reduced to a written system by order of the Emperor Frederic about the year 1152 under the title of Feudorum Consuetudines.

The Feudal Law was introduced by the northern nations who settled in the Roman Provinces in the 6th & 7th Centuries.

Canon Law is a System of Ecclesiastical Polity, formed since the establishment of Christianity in Europe. In its present form it may properly be distinguished into three parts. 1st The ancient Canon Law consisting of Rules & ordinances made by the Synods & Councils in the first ages of Christianity, & confirmed by Constantine Justinian & other Emperors. 2d The Jus Pontificium or papal Bulles, Decrees, & Epistles, respecting the power & Supremacy of the Popes, & the rights & immunities of the Clergy. 3d Such parts of the Roman Civil Law, as the Popes & Canonists have incorporated with the pontifical Law, in their Codes, Decrees, & Decretal Epistles.

A Code of Canon Law was compiled early in the ninth century. About the year 1150 Gratian published a new Code with large additions and emendations. This considered as the basis of Canon Law. Justinian's Pandects being discovered about that time the study of both were united which has produced a similarity & connexion between the Civil & Canon Laws that render them inseperable.

The Decrees of Councils, the opinions of the Fathers, & the Edicts of the Popes the original sources of the Canon Law.

The Roman Civil Law is considered as the most com-
-plete & comprehensive system of written reason and natural equity in the world; is regarded as a Code of Universal Justice applicable to all ages & Countries, and constitutes the basis of the Civil Law of most nations in Europe.

The Law of the 12 tables was the basis upon which the vast fabric of the Roman Law was gradually erected & was twelve centuries in completing.

During the Common Wealth the constitutional sources of the Lex scriptum or written Law were 3, Leges, Plebescita, & Senatus Consulta. The Lex non scriptum or unwritten Law consisted of Regulæ Legis. Fori Disputationes. Responsa Prudentum. Jus Honorarium. Jus Pretorium. Legis Actiones. Jus Pontificium. This last was essentially different from the Jus Pontificium or Canon Law of Modern Rome.

The Imperial Constitutions were of three species. Epistola or Rescripta. Decreta, & Edicta — The Responsa Prudentum of Papinian, Paulus, Caius, Ulpian & Modestinus, eminent Lawyers in the 3d. & 2d. Centuries of the Christian Æra, which was the brightest period of Roman Jurisprudence, were declared authoritative by the Emperors. — Justinian's Digest was principally formed from the works of these Lawyers.

The Gregorian & Hermogenian Codes were compiled in Constantine's time about the year 306. The Theodosian Code in 438. The Æra of the meridian & decline of

of the Roman Law was Justinian. His Code was a compilation from the Codes of Gregorius, Hermogenes, Theo-dosius, & the before mentioned Lawyers & is divided into 12 Books & 776 titles. His Institutes containing "totius legitimæ Scientiæ prima Elementa," in 4 books pub.d in 533. The Digests or Pandects are divided into 7 parts, 50 books & 430 titles published in 533. Novel Constitutions in 9 parts & 168 numbers published in 566.

Basilica & Epitomes of Jus Greco-Romanum were compiled in the Eastern Empire, which from the 9th century till it was conquered by the Turks in 1453 was regulated solely by the Basilical Code.

The Era of the final extinction of Roman Law was 752 & it began to revive in 1137 upon the discovery of Justinian's Pandects at Amalphi; since which it has constituted more or less of the Civil Code of all the nations of Europe. None of the Basilical Code was adopted on the revival of the Civil Law.

A Synoptic View of the Constitution and Laws of New-Jersey methodically arranged.

1st Of the several foundations nature & extent of the Municipal Law of New-Jersey

Its foundations are four-

1 The Constitution established July 2d. 1776
2 The Common & Statute Law of England
3 Acts of Assembly before the Revolution
4 Acts of Assembly since the Revolution

Objects of the Law are

1 The Rights of Persons. 2 The Rights of Things
3 Private Wrongs 4 Public Wrongs or Crimes & Misdemeanors.
5 Courts of Justice & mode of Proceeding in the Courts.

1 Rights of Persons

Persons considered only in their relative Capacities of Public & Private

Persons in their public Capacity are either Magistrates or People

Magistrates are either Supreme or Subordinate.

The Supreme Magistrates are either Legislative or Executive

The Legislature of New Jersey consist of two branches the Legislative Council & the General Assembly

The Supreme Executive Officer of New Jersey is the Governor, wherein of 1 his appointment 2 Office. 3 Powers 4 Salary & Perquisites.

Of the Revenues of the State, these arise at present 1 From Taxes annually levied by Act of Assembly 2 From Fines & Forfeitures

Of the Revenue arising from Taxation and thence of, ~~their collection~~ & Assessors, Township Collectors, Com.rs of Appeal, County Collectors, Treasurer of the State ~~& Auditor of Accounts~~.

Of the Revenue arising from Fines & forfeitures their several kinds — manner of collection & passing into the Treasury

Appropriation of the Revenues of the State 1 For furnishing the Quota for the United States 2 Support of Government 3 Contingent Expences.

Subordinate Magistrates are
1 Secretary of the State 2 Justices of the Supreme Court &c.
3 Judges of the Inferior Courts of Common Pleas
4 Justices of the Peace, 5 Clks of the Courts of Common Pleas 6 Sheriffs. 7 Coroners.
8 Constables. To these we may add

1 Chosen Freeholders & their office of the duty of the Board of Justices & Freeholders
1 For Build.g & Repair of Court House & Gaols
2 Build.g & Repair of County Bridges
~~3 For Appointing [illegible] Collectors~~
3 Settling Court Rates. &c

2 Surveyors & Overseers of the Highways & of the Laws relating to Highways & Bridges in this State.

3 Overseers of the Poor & of the Laws relating to the Settlement & relief of the Poor. ~~The [illegible]~~ This arise 1 By Taxes 2 Penal forfeitures.
4 Town Clerk & of Estrays &c:

2 of the People these are either
1 Aliens ~~of the law relating to them~~ acts of Naturalization
2 Citizens considered in a State
1 Civil
2 Military. Militia Laws &c: Quart: Soldiers &c
Persons considered in private Capacity, as,
1 Master & Servant — apprentices
2 Slave — Acts regulating
3 Parent & Child — Bastard
3 Guard.n & Ward. of guard. under 14 above 14

Of the Laws relating to Property.

Property either real or personal

1 Real wherein of
1 The mode of Locating Land Council of Proprietors Surv. Gen.l &c
2 of making Inessen Conveyances
1 absolute by,
1 Descent - Act att. Descent of Real Estates
2 Purchase Acknowledgm.t Deed, Femes Covert
3 Insolvency Lands made Chattels for payment of Debts
4 absconding Attachm.t Law
5 Delinquency Forfeitures
6 Will how to be executed for a good Devise
2 Conditional
1 Mortgages must be recorded ~~[illegible]~~
Off.s Annuity ~~provided~~ real property ~~[illegible]~~
~~2 P~~ 3 Offences affecting real property
1 By destroying Timber vid Timber Act
2 Hunting on another's Land A.L.
3 By Trespassing of Swine Cattle, Sheep, Horses &c
& to prevent &c. the Law requires
1 Lawful Fences.

2 Personal property ~~w. may be acquired or lost~~ by

1 The various ~~mode of acquiring & losing it:~~ by.

1 Contract + Interest.

2 Judgment

3 Insolvency — vid: Law:

4 absconding — attachmt. Law:

5 Delinquency — Treason, Confiscation Law, &c:

6 Testament } vid:

7 Administration }

2 The ~~Injuries affecting~~

Remedies provided for injuries done to,

1 a person's Reputation by

Malicious prosecution by Ind.t & Inf.n

2 personal property by

1 Non payment of Debts —

Defalcation Act,

Attachment Law

Joint partners

debts due to the United States

2 Non payment of Legacies

3 Fines & Forfeitures to the State

A Syllabus of the Constitution & Laws of New Jers[ey]

Introduction

Containing the several foundations, nature, & extent of the Municipal Law of N. J.

Its foundations are 4 vide antea

Objects of the Law of New Jersey are

1 Persons. 2 Property, 3 Crimes & Misdemeanors

4 Courts of Justice & the modes of proceeding therein

Magistrates & Officers

1 Legislative	Leg: Council Genl. Assembly
2 Executive	Gov.r vice President
3 Judiciary	Judges, Justices of Peace &c:
4 Ministerial.	Secy, Clerks, Sheriffs Coroners
5 Fiscal	Assrs: Colrs. Treasurer &c:
6 Parochial	Const:, Freeholders, Overseers &c:
7 Military	

Analysis of Dr. Witherspoon's Lectures on Eloquence or Composition Taste & Criticism

3 Preliminary Lectures

1 Lecture on the question whether Art or Nature contribute most to the production of a complete Orator

A few observations on the mutual influence of Nature & Art 1 Some degree of natural capacity evidently necessary

2 To make what is called a complete Orator very great natural powers are necessary & great cultivation too.

3 Perhaps the most extraordinary appearances in this as well as in other branches have been from nature wholly, or but with very little Study. These spontaneous productions are as so many prodigies

4 When persons are meanly qualified in point of natural capacity for any Art, it is not very proper to attempt to instruct them in it

5 In the middle regions of genius there are often found those who reap the greatest benefit from Education & Study. Such generally fill the most useful & important stations in life. A very great genius is often like a very fine flower, to be wondered at, but of very little value either for food or medicine. A very great genius is also often accompanied with certain singularities.

2 Lecture General rules for writing & speaking

1 Study & imitate the greatest Examples, get the most approved authors for composition; read them often & with care. Cicero, Demosthenes, Livy, Salust, Tacitus Xenophon — Addison, Swift Hervey, Dr. Robertson

2 Accustom yourselves early & often to composition & exercise in pronunciation.

3 Lecture same subject continued

3 Be careful to acquaint yourself well & be as perfect as possible in the branches that are subordinate to the Study of Eloquence. What I have here in view chiefly are the Grammar Orthography & punctuation of the English Language

4 Observe early & study to guard against some of the most remarkable blemishes in writing & speaking such as partial phrases, improper Epithets, unnecessary words & synonimous phrases, Vulgarisms — Lastly, follow nature

After the preliminary discourses proceeds methodically

1st To treat of Language in general, its qualities & power in eloquent Speech, & the history & practice of it as an Art

2d. To consider Oratory as divided into three great kinds the Sublime the Simple & the mixed — their characters, distinctions, their beauties & their uses

3d. To consider it as divided into its constituent parts Invention, Disposition, Style, Pronunciation & Gesture

4th To consider it as its object is different Information, Demonstration Persuasion & Entertainment

5th To consider it as its subject is different, the Pulpit the Bar, & the Senate or any Deliberative Assembly.

6th To consider the structure & parts of a particular discourse their order connexion properties & uses

7th Recapitulate & enquire into the principles of Taste or beauty & gracefulness as applicable not only to Oratory but to all other commonly called the fine Arts

A Table shewing the natural Order & Harmony of the four Evangelists according to Dr. Doddridge.

Matthew verses	Mark	Ch: Luke verses	Ch: John verses
		1 — 1 — 4	1 — 1 — 14
		1 — 5 ad finem	
— 18 ad fin			
— 1 — 17		3 — 23 ad finem	
		2 — 1 — 39	
— 1 ad finem			
		ij — 40 ad finem	
ij — 1 — 6	i — 1 — 6	iij — 1 — 6	
ij — 7 — 12	i — 7, 8	iij — 7 — 18	
			i — 15 — 18
ij — 13 ad finem	i — 9 — 11	iij — 21 — 23	
— 1 — 11	i — 12, 13	iv 1 — 13	
			i — 19 ad fin:
			ij — 1 ad fin
			iij — 1 ad finem
iv, 3 — 5	vj — 17 — 20	iij — 19. 20	
			iv — 1 — 42
— 12	i — 14, 15		iv — 43 ad fin:
		iv — 14 — 30	
— 13 — 22	i — 16 — 20	iv — 31, 32	
		v — 1 — 11	
ij — 14, 15	i — 21 — 31	iv 33 — 39	
— 23 ad fin; viij, 16, 17	i — 32 — 39	iv — 40 ad fin	
vj & vij in tot:	i — 40 ad fin:	v — 12 — 16	
ij — 1 — 4		v 17 — 28	
— 2 — 9	ij — 1 — 14		v, 1 ad fin:
	ij 23 ad finem	vj 1 — 5	
— 1 — 8		vj — 6 — 11	
ij — 9 — 15	iij — 1 — 7		
ij — 15 — 21	iij 7 — 12	vj 12 — 19	
	iij 13 — 19		
		vj 19 ad fin:	
		vij 1 — 10	
ij 5 — 13			
		vij 11 — 17	
	iij — 19 — 21		
		vij 18 — 35	
2 — 19			
20 ad finem			
		vij 36 ad fin:	
22 — 32	iij 22 — 30	viij 1-3, xi 14.15.17 — 23	
33 — 37		xi 27-28	

Matthew	Mark	Luke	John	Matth
Xij 38 — 45 —	——	{Xi, 16.24 — 26 / 29 — 32}	——	X, 57
Xij 46 ad finem	iij 31 ad finem	Xij 33 — 36, viij 19	— 21 ——	
Xiij 1 — 23	iv 1 — 25 —	viij 4 — 18	——	XVI, 1
Xiij 24 — 30, 36 — 43	——		——	XI, 1
Xiij 31 — 35. 44 — 53	iv 26 — 34 —	——	——	
viij 18 — 27 —	iv 35 ad fin	viij 22 — 25. ix 57 ad fin	——	XI, 57
viij 28 ad fin: IX — 1 —	vj 1 — 21 —	viij 26 — 40	——	
IX 10 — 17	vj 15 — 22 —	v — 29 ad fin	—	XXI, 20
IX 18 — 34 —	v 22 ad fin —	viij 41 ad fin:	——	XXII, 1
Xiij, 54 ad fin: ix 35 ad fin	vj 1 — 6	——	——	XXII, 1
X 1 — 15 —	vj 7 — 11	IX 1 — 15 —	——	XXIII, 2
X 16 — 28 —	——	——	——	
X 29 ad finem XI. 1	vj 12, 13	IX 6	——	
XIV 1.2.6, — 12 ——	vj — 14 — 29	IX 7 — 9	——	XIV,
XIV 13 — 23 —	vj 30 — 46	IX 10 — 17	vj 1 —	XXV.
XIV 24 ad finem —	vj 47 ad fin:	——	vj 16 —	XXVI.
			vj 22 ad fin	
XV, 1. to end of XVI	vij 1 to end of viij & IX, 1	IX 18 — 27	——	XXVI.

End of the 1st volume

Matthew	Mark	Luke	John	Matth
XVII, 1 — 13 —	IX, 2 — 13 —	IX, 28 — 36	——	XXVI,
XVII, 14 ad finem	IX 14 — 33 —	IX, 37 — 45	——	
XVIII, 1 — 9 —	IX, 33 — 37, 42 ad fin:	IX, 46 — 48	——	XVI,
XVIII, 10 ad finem	——	——	——	
——	IX 38 — 41 —	IX, 49.50. X, 1 — 16	——	
——	——		vj & viij per	XVI. 3
——	——	X, 17 to XVII, 16	——	XVI, 57
——	——	IX, 51 — 56	——	XVI. 5
——	——	XVII, 12 ad fin:	——	XVII, 1.2
——	——	XVIII. 1 — 14	——	XVII, 1
——	——	——	IX & X per	
XIX per totum	X, 1 — 31 —	XVIII. 15 — 30	——	XVII.
XX. 1 — 16 —	——	——	XI, 1 ad fin	XVII, 3

Matthew	Mark	Luke	John
X, 17, ad finem	X, 32 ad finem	XVIII, 31 ad fin: XIX 1–10	———
———	———	XIX, 11 — 28	———
XVI, 6 — 13 —	XIV, 3 — 9	———	XII, 1 — 11
XI, 1 — 16 —	XI, 1 — 11	XIX, 29 — ad fin:	XII, 12 — 19
I, 17 — 19 —	XI, 12 — 14	———	XII, 20 — 43
———	XI, 15 — 19	———	XII, 44 ad finem
XXI, 20 ad finem	XI, 20 ad fin: XII, 1–12	XX, 1 — 19	———
XXII, 1 — 14 —	———	———	———
XXII, 15, ad XXIII, 22	XII 13 — 40	XX, 20 ad finem	———
XXIII, 23 ad finem	———	———	———
———	XII, 41 ad fin:	XXI, 1 — 4	———
XXIV, 1 ad finem	XIII, 1 ad fin:	XXI, 5 — 36	———
XXV, 1 ad finem	———	———	———
XXVI, 1–5, 14 — 16	XIV, 1, 2, 10, 11 —	XXI, 37 ad fin: XXII, 1 – 6	———
XXVI, 17 — 20	XIV, 12 — 17	XXII, 7 — 18	XIII, 1 —
———	———	XXII, 24 — 27	XIII, 2, 3 — 17
XXVI, 21 — 25	XIV, 18 — 21	XXII, 21–23, 28–30	~~XIII, 2, 18~~ — 30
———	———	XXII, 31 — 34	XIII, 31 ad fin
XXVI, 26 — 30	XIV, 26 — 26	XXII, 19, 20 —	———
———	———	XXII, 35 — 38	XIV, 1 — 14.
———	———	———	XIV, 15 ad fin: XVII
XXVI, 31 — 56	XIV, 27 — 52	XXII, 39 — 53	XVIII, 1 — 12
XXVI, 57, 58, 69 ad fin:	XIV, 53, 54, 66 ad fin:	XXII, 54 — 62	XVIII, 13, 18, 24, 27.
XXVI, 59 — 68 —	XIV 55 — 65 —	XXII 63 ad fin:	XVIII, 19, 23 — 28
XXVII, 1, 2, 11 – 18, 20 – 23	XV, 1 — 14 —	XXIII, 1 — 23	XVIII, 28 ad fin:
XXVII, 19, 24 — 31	XV, 15 — 20 —	XXIII, 24, 25 —	XIX 1 — 16
XXVII, 32 — 34, 38	XV, 21 — 23, 25, 27, 28	XXIII, 26 — 34	XIX 16 — 18
XXVII, 35–37, 39 — 44	XV, 24, 26, 29 — 32	XXIII 34 — 43	XIX, 19 — 24

Matthew	Mark	Luke	John
XXVII 45 — 61	XV 33 ad fin:	XXIII, 44 ad fin	XIX, 25 ad fin:
XXVII, 3 — 10, 62 fin:	—	—	—
XXVIII, 1 — 4	XVI, 1, 2 - 3. 4	XXIV, 1. 2, 12 —	XX 1 — 17
XXVIII, 5 — 10	XVI, 2, 5 — 11 —	XXIV. 3 — 11	XX. 18 —
XXVIII, 11 — 15	XVI. 12 — 13	—	—
—	—	XXIV, 13 — 33	—
—	XVI. 14. —	XXIV, 33 — 43	XX. 19 — 23
—	—	—	XX. 24 — 29
—	—	—	XXI. 1 — 24
XXVIII. 16 ad fin:	XVI, 15 — 18	XXIV, 44 — 49	—
	XVI. 19 ad fin:	XXIV. 50 ad fin:	XX. 30 ad fin:
			XXI, ult: —

The States of the Low Countries convened at
p.28 Ghent in the year 1576 unanimously agreed
upon the Act called the Pacification of Ghent
the principal articles of which were; that all the
foreign soldiers should be expelled the provinces;
that the ancient forms of Government should be
restored; that the matters which concerned religion
in each province should be referred to the provincial
states; & that, for the performance of these articles
all the provinces should forever be confederated with
those of Holland & Zealand.

30 The northern provinces in 1579 meeting by
their deputies, at Utrecht agreed upon & formed that
act or alliance which hath ever after been called
The Union of Utrecht & was the original constitution
of that form of Government which has ever since
prevailed in the United provinces. It was founded
on the violation of the Pacification & intended to
strengthen & support it

The principal Articles are; the States of the
seven provinces agree to unite themselves in such
a manner as if they were but one province, never
to be divided; reserving nevertheless to each particular
province & city all their respective privileges rights &c

The States in the name of all their constituents bind themselves to assist one another with their lives & fortunes against any attack upon any of them, whether upon pretence of Sovereignty, of restoring the Roman Catholic Religion, or any other cause whatsoever. Fortresses to be repaired by the province where situated. New ones built by the generality. Taxes to be employed for the common defence. All the men from 18 to 60 to be enlisted & disciplined within a month. Peace or war not to be declared without the concurrence of all the provinces; other cases that concern the management of both to be determined by pluralitity of voices; all little differences that shall arise between the provinces to be submitted to the Stadtholder. Free exercise of Religion. The States of the respective provinces are to be held according to ancient usage. Mint regulated by all the provinces

Prince of Orange the head. was assassinated at Delft. Succeeded by Prince Maurice his Son 1583. Queen Elizabeth agrees to furnish them with supplies of men & money & in 1585 Sir Jn.o Norris was sent over to command her forces. Furnished them assistance during the whole of her Reign

During the war the Hollanders took most of the Spanish settlements in the East-Indies & some

in the West-Indies which they have held ever since.
In 1609 a truce was concluded for 12 years; principal articles were the declaration of treating them as free provinces: the cessation of all acts of hostility; the enjoyment of what each party possessed: free commerce, & no fortifications to be erected

Thus after a war of more than 30 years the seven United Provinces came to be acknowledged as
50 a free Republic by their ancient masters. The truce
51 was afterwards changed into a general peace

Present form of Government in the United Provinces

Each of these provinces is composed of several cities & towns which have many parts of the sovereign power within themselves & are not subject to the sovereignty of their province; for as the States General cannot raise any new levies of money, or make war or peace, or form any new alliances without the consent of every province; neither can the States of a province conclude any of those particulars without the consent of each city or town that by the ancient constitution of the province has a voice in that assembly. All the principal cities have courts of Judicature within themselves; & though there is in most civil cases an appeal from the city courts to those of the province, yet in criminal cases no appeal.

Hence the principal parts w.ᶜ enter into the composition of this Government are; the freedom of the Cities; & the Sovereign authority of the States of the provinces; the Articles or constitutions of the Union; and the authority of the Stadtholders.

The Sovereign Authority of the City of Amsterdam is in the Senate which is composed of 36 persons who hold their offices during life & when any one dies a new one is chosen by the rest of the Senate. This mode of election likewise obtains in all the other great cities of the seven provinces, so that their government is far from being popular & the inhabitants a free people as generally esteemed.

The Senate likewise chooses all the chief magistrates of the town, such as

1 Burgo-Masters of w.ᶜ there are 4 in Amsterdam not much unlike the Lord Mayor & Aldermen of London Salary not above 1000 gilders ꝑ Ann.

2 Echevins are the members of the Court of Justice in every town. In Amsterdam there are 9. They have jurisdiction in all Criminal cases without appeal but in civil ones appeal lies to the provincial Court.

Subordinate Officers under these, are

1 ~~Scout~~-Master similar to our Sheriff or the Lieutenant of the Police in Paris

2 The Pensioner who is always a civil Lawyer & much like the Recorder of London. He is first Orator of the Senate, makes all their public Speeches, has a place in all the assemblies of the province & is one of their Deputies in the States General

3 The Treasurers who receive & issue the revenues or Treasure of the City

The Revenues of Amsterdam arise, out of the constant Excises upon all commodities consumed; out of the imports & exports of all merchandizes; out of the rents of the city houses & lands; out of certain duties upon every house; or out of the extraordinary levies that are raised by the consent of the Senate, for furnishing such part of the public charge as is agreed on by their deputies in the provincial States, for the use of the province; or by the deputies of the States of Holland for the use & support of the Union. All these payments amount at a moderate computation to 20,000,000 of guilders, & are carried into the common Stock of the Town.

The Senate likewise chooses the Deputies who are sent from this City to the States of Holland. This Assembly is composed of deputies of the nobles & of the towns having 19 voices; of which the Nobles have

have the first & the towns 18. The deputies of the Towns are chiefly chosen among the Senate & Magistrates of each town; their number is uncertain according to the pleasure of the cities which send them, but they have all together but one voice, & are all maintained at the charge of their respective cities.

The States of Holland assemble generally four times every year at the Hague. Moreover on all extraordinary occasions they are called together by a Council called The Committee of the States, is properly the Council of State of the province and composed of one deputy from the nobles, one from each great town, & but one from 3 of the small towns which choose him alternately. This Council sits constantly at the Hague executes the resolutions of the provincial States & proposes to them at their extraordinary meetings the subjects that come under their consideration.

In these provincial assemblies the voices are equal & they must be unanimous. Their resolutions when agreed to must be sent to each city and agreed to there in like manner.

Besides these assemblies every province has a Treasurer & a Chamber of Accounts who manage the general revenues of the province.

The Union is formed of the sovereign provinces of Holland, Frizland, Zealand, Utrecht, Groningen, Overyssel & Gelderland, who choose their respective deputies & send them to the Hague to compose the three several Assemblies called The States General, The Council of State, & the Chamber of Accounts.

The sovereign power of this federate Republic is in the Assembly of the States General which sits constantly at the Hague & represents the sovereignty of the Union.

The provinces send their deputies to the States General in what number they please; some send 12, some 10 & others only 2; this making no difference, as all the deputies of one province be they more or less have only one voice. Some of the provinces likewise send their deputies for life, others for a certain number of years, & others only for one year.

The province of Holland sends to the States General one of their nobles who is perpetual, one deputy chosen out of North Holland, two of their principal Council of State, two deputies chosen out of their 8 principal towns, and their pensioner. Neither the Stadtholder nor any person in a military charge has a seat in this Assembly.

Every province presides their week in turns in the States General, by one of the most qualified persons among the deputies of that province: he is seated in a large arm chair at the middle of a long table capable of holding 30 or 40 persons, for of about that number is this Assembly usually composed. The Greffier or Secretary

of State sits at the lower end of the Table, & when any foreign minister has an audience he is seated over against the president at the middle of the Table.

The Council of State is composed of a certain fixed number of deputies from the several provinces; Holland sends three, Zealand Utrecht & Gelderland two each, Frizeland, Groningen & Overyssel only one each, so that this Council consists only of 12 persons who vote not by provinces but by personal voices & each deputy presides by turns. In this Assembly the Stadtholder has a seat & a decisive voice; the Treasurer also has a seat.

This Council executes all the resolutions of the States General, & prepares all the principal matters which come under their deliberation.

In the month of October or November of every year this Council forms an estimate of the expences which they imagine will be necessary for the service of the ensuing year, presents it to the States General & desires them to demand so much of the provincial States, to be levied according to the proportion wch they have heretofore agreed upon between the provinces, which are in 1,000,000 of guilders in Holland 583,090, in Frieland 116,611 in Zealand 91,831, in Utrecht 58,301, in Groningen 58,301, in Gelderland 36,120, in Overyssel 35,711, guilders.

The Council of State likewise disposes of all the Sums of money that are destined for extraordinary affairs, & expedites all the Orders for the Expences of the State according to the resolutions first taken by the States General. These orders are first signed

signed by three deputies of different provinces & by the Treasurer General & then registred in the Chamber of Accounts before the reciever General is authorised to pay them

Every province raises what sum of money its States thinks proper; & after its quota is sent to the reciever General, the rest is appropriated to the particular uses of the province

The Chamber of Accounts is composed of two deputies from each province who are changed every three years

Besides the above there is a Council or College of Admiralty composed of 7 deputies & has the charge of the fleet & all naval affairs. The Stadtholder as Admiral in Chief, or, in his absence the vice-Admiral has a seat in this College.

The Stadtholder as captain General and high Admiral commands all the forces by Land & sea; has the disposition of all military commands & government of towns, together with the power of pardoning crimes & choosing magistrates upon the nomination of the Senates of the respective towns, as they generally present 3 to the Stadtholder who elects one out of their number; and as the States=

States General represent the Sovereignty of the Union in the power of making peace or war, in forming foreign alliances & raising & coining money, so does the Stadtholder its dignity by public guards & the attendance of all Military officers & by the splendor of his Court.

The Constitutions of Zealand Gelderland & Utrecht are very similar to those of Holland

The form of Government of Frizeland differs materially. It is divided into 4 bailies & the Assembly of the States is composed of two persons chosen out of every baillage & two out of every town elected by the people at large

In the province of Groningen the elections of the deputies are made nearly as they are in Frieland

The revenues of the Union generally amount to about 25,000,000 of guilders. The principal funds out of which it is raised are the different excises, the customs & the land-tax. The Excises are so very high in general that they are not to be paralleled in any part of Europe as there is scarcely an article of the necessaries of life in this country but pays a heavy tax.

States General ~ These orders are first signed

The Customs & Land Tax are both low

Out of this revenue are paid all the military forces by Sea & Land; all the public officers of the State; all their ambassadors & ministers in foreign countries; & all the Interest of the public debts of the States General for besides the Debt of the generality, all the provinces have large public debts the Interest of which is paid out of the provincial revenues

All the public Debts of these provinces, including those of the generality, & of the particular provinces & cities amount to very near £50,000,000 sterling

The Hollanders have nearly £30,000,000 sterling in the English funds £20,000,000 in France and £15,000,000 in Germany Denmark Sweeden & Russia besides their own debt which is an amazing sum for the No. of inhabitants which never exceeds 2,00000

In Denmark the several departments established for regulating the affairs of the Kingdom are the board of finances, of war, of admiralty & of Commerce. p 319

In Sweeden the public business is expedited by Colleges. The College of Justice is the first 2 The College of War 3 The College of the Admiralty. 4 The College of the Chancery. 5 The College of Finances or Chamber of Accounts 6 The College of State 7 The College of Commerce 8 The College of Revision or high Court of Appeals.

Sr Wm Temple says the first revolt in the Low Countries begun in 1566 wh was soon after settled. In 1567 the Duke of Alva was sent there wth 10,000 forces wh with 2000 there before were employed in forcing their subjection. His Government growing intolerable the Gueses sieze the Briel & commence the second revolt in 1570

An agreement was entered into by many of the Provs called the Pacification of Ghent in 1576. Alliance of the seven States formed in 1579 & called the Union of Utrecht. The difficulty & uncertainty of their affairs occasioned their stamping their first Coin with a Ship labouring among the waves without sails or Oars with this motto Incertum quo fata ferant.

States General — These orders are first signed

The Dutch East India Company (the first of the kind & the pattern of all succeeding ones) was established in the year 1602.

Their original Fund was only £565,236 Sterling
This fund is divided into 2130 Shares or stocks
Each share is equal in value to — £262..10.—

The price of Shares or Stocks has often varied. They have been as high as 650 ℘ Ct. advance, but for some years the standing price has been 240 ℘ Ct. more than their original value.

From its first Institution until the year 1665 the annual dividend was about 20 ℘ Cent, from thence till 1728 about 23 ℘ Ct. Since it has gradually fallen to 20, 15 & lower

In 1751 Their Capital in India was £3,106,250
The Debts they owed in Europe & India reduced their Capital to } —2,485,000

Abbe Raynal vol 1.

The English East India Company (as it at present subsists) was established in 1702 ~

Their Original Stock —— £3,150,000

Divided into shares of £100 sterling each ~

In 1773 – their whole Estate in Europe amounted to	£7,663,075
Their debts & engagements in Europe —	9,075,062..10
Deficiency in Europe	1,411,987..10

Their whole Estate in India amounted to	£6,297,331..5
Their Debts in India ——	2,000,462..10
Surplus in India	£ 4,296,868..15
Deduct the deficiency in Europe —	1,411,987..10
Clear Stock on hand	2,884,881..5
Original Stock — —	3,150,000..—
Loss of Capital	£ 265,118..15

Dividend annually 12½ ℔ C^t^ to Stockholders.

Raynel vol..

States General ~ These orders are first signed

In 1766 The English imported from China

of Tea	6,000,000	lbs
The Dutch imported	4,500,000	
The Sweedes	2,400,000	
The Danes	2,400,000	
The French	2,100,000	
Total	17,400,000	lbs

In 1664 French East India Company established.
Their original Stock 15,000000 livres = £656,200.—
No. of Shares 36,920. Cost a Share 1600 livres

Abbe Raynal

States General; These orders are first signed;

An Address

To the

Inhabitants of Bridge Town

and its Environs,

On the Subject

of

Establishing a regular School

An Address to the Inhabitants of Bridge Town &c.

Friends & Fellow Citizens

As the establishment of Schools for the Education of youth is a matter of great & lasting importance to the rising Generation & to our Country, it justly merits the attention of all ranks & orders of mankind. The advantage of Education is so universally known and acknowleged that little need be said in proof of it. — Those who have had the happiness of a liberall Education percieve the advantages of it too clearly, & those who have been unfortunatelly deprived of every opportunity of improvement, feel the inconveniences of their situation too sensibly, to doubt it.

We come into the World ignorant of every thing around us; & it is only by the cultivation of our intellectual faculties which gradually unfold themselves as we advance from infancy to manhood, that we obtain any true knowlege of the numerous objects that constantly present themselves to our view & contemplation. And as we are daily & hourly surrounded with a multiplicity of objects both useful & necessary to our preservation & well being; we must of consequence be either miserable or happy in proportion as we are ignorant of, or acquainted with, those things with which we are so nearly connected.

It is therefore a matter of the greatest consequence to our Children to have their young & tender minds, susceptible like wax of every kind of impression, properly cultivated and improved. This is a duty enjoined upon us by the Law of Nature & the Law of God. It is a duty we owe our Children. It is a duty we owe our Country. — As there are very few parents who have leisure & convenience for teaching their Children themselves, this business must necessarily be entrusted to Schoolmasters who make teaching their profession. Too much pains cannot be taken to procure able & faithful Masters & to give them suitable encouragement. We shall then have our Children properly taught & instructed & their rational faculties improved in such a manner as to fit them for usefulness in the World. "I consider," says Mr. Addison, "an human Soul without Education like Marble in the quarry which shews none of its inherent beauties till the skill of the polisher fetches out the colours, makes the surface shine, & discovers every ornamental cloud spot & vein that runs through the body of it. Education after the same manner, when it works upon a noble mind, draws out to view every latent virtue & perfection, which without such helps are never able to make their appearance." Many Children of excellent natural parts grow up in

Ignorance & remain in obscurity for want of that im=
=provement which would fit them for shining in public
stations.

But besides these advantages of Learning which are applicable to all times & places, there are others arising from the present State of our Country & the nature of our Government which deserve particular consider=
=ation. While this State with the other States in Union, were Colonies of the British Empire, subject to a Monarch who is the fountain of honour & of office, the reins of Government were in the hands of a few, who, by their interest with, & servile submission to, the Ministry, wormed themselves into power & ingrossed every office of importance. Thus deprived of every opportunity of promotion by merit & learning, parents had no inducement to Educate their Children in such a manner as to fit them for the higher stations in life. The scene is now changed. Our State is become Independent & the popular frame of Government we have established hath left every place of trust & importance open & attainable by all. This must afford a strong inducement to parents to Educate their Sons so as to fit them for filling public stations with usefulness & credit. This will undoubtedly stimulate the rising

Generation to qualify themselves for executing them with splendor & dignity.

In a Republican Government like ours it is also essential to the preservation of Liberty that Learning should be patronized & encouraged. Public virtue & patriotism, the very life & Soul of such a Government are thereby promoted, & that political jealousy which constantly watches over & keeps a check upon encroaching power is by that means perpetually kept up. All Republics are so sensible of this that they have made the establishment of Schools & cultivation of Learning a part of their Constitution, witness the ancient Republics of Greece & Rome, the United Provinces of Holland, the Cantons of Switzerland, & some of our sister States particularly Pennsylvania & Massachusetts.

It is further necessary to cultivate Learning in our State in order that we may constantly have a sufficient number of Men qualified for public stations. Legislators, Magistrates, & all other officers, whether civil or military are, by our Constitution, to be taken from the people at Large. To discharge the Duties of most of those Offices with honour & advantage requires a better Education than has hitherto fallen to the lot of many amongst us. As our Children may all of them

some time or other be called upon to execute public offices it is our duty to endeavour to give them Educations suitable thereto. I mean not a liberal academical Education, this perhaps would be in the power of but few. But a good English Education sufficient to qualify a person for common business might be easily acquired if due attention & encouragement were given to able Masters & suitable Schools established upon rational principles. The School we have hitherto had in this Town for want of due encouragement & an able Teacher, & for want of being constantly kept up & properly regulated, has contributed very little to promote Learning. The method of Teaching adopted in it is too lame & contracted to answer the purpose of a common English Education. Experience hath fully demonstrated this. A more regular & effectual plan of Education, and a School established upon better principles, must therefore appear highly necessary to every intelligent person.

For this purpose suitable Trustees must be appointed to regulate & superintend the School; Wages sufficient to procure an able & experienced Master must be given; frequent visitations, examinations,

and public exercises must be instituted, & other parts of a regular academical mode of Education adopted. Such is the plan now proposed & recommended. A plan that will infallibly succeed if strictly pursued. It is less difficult & less expensive than the mode heretofore adopted & requires nothing but resolution & perseverance to carry it into Execution. It will expedite Learning by exciting a laudable emulation amongst Scholars & by making study pleasant & agreeable to them. It will secure us a constant & capable Teacher, & establish the School upon a reputable and permanent basis.

Many circumstances concur to render the execution of the plan easy & eligible at this time, as the present favourable situation of public affairs; the great plenty of money rendering it easy to obtain donations for the benefit of the School; the healthy & central situation of this village, a place of Trade, the Metropolis of the County, & the seat of the Courts of Judicature, where Boys have frequent opportunities of hearing the pleadings at the Bar, the solemn adjudications of the Bench, & other forensic exercises that will give them a taste, & fit them for public business

The concourse of people of all ranks, & the variety of business daily transacted here, also furnish opportunity to young persons of forming a more beneficial acquaint=ance with the world & mankind, than they could if Educated in a more private & retired place. These circumstances render this place more suitable and convenient than any other part of the County for a regular School, & such a School once fairly set on foot, I flatter myself, would meet with the patronage & encouragement of the principal people in the County, would daily increase in reputation & in the number of Scholars resorting to it, and would probably in a few years become so famous and useful as to attract the notice of the Legislature, & obtain a legal establishment.

The advantages we should derive from such a School are so many & obvious that it is unnecessary to attempt an enumeration of them. I shall only observe that it will enable us to Educate our Children in a genteel manner, with much less trouble & expence than formerly. This renders the plan more particularly beneficial to the poorer class of people. The rich may send

their Children abroad for Education if a suitable School is not established near home. The poor are unable to do this. A good School erected at their Doors, where their Children may be instructed in every branch of useful learning, at a moderate expence, must be very advantageous to them; & if successful in obtaining donations, many poor & fatherless Children would be Educated, with little or no expence to them or their indigent parents. In short, every Class of people will find their advantage in encouraging and promoting the School we are now recommending. Give me leave then to urge & intreat you, for your own Interest, for the advantage of this little Town, for the good of your Country, & the benefit of your Children, to exert yourselves in carrying the plan effectually into execution. It is built upon the same principles with all other regular Schools, &, like them, will indubitably succeed, if properly encouraged & supported.

Jonathⁿ. Elmer

Bridge Town
15th October 1779.

A Plan of Tuition for the use of the English School or Academy in Bridge Town

The School to consist of 6 classes.

1st *Infant Class* which will comprehend all the young Children; from their first beginning to learn their Letters, until they can readily Spell words of two Syllables.

This Class must use a *Primer* or *Dilworth's* Spelling Book, the Children in it taught separately, & care must be taken to instruct them in the proper sound of all the Letters of the Alphabet, with the true modulation of the organs of Speech in pronouncing them. For want of due care at first, many Children contract a habit of sounding their Letters wrong, which they ever after retain, unless great pains be taken to break them of it.

2d *Spelling Class* including Children that can Spell words of two Syllables until they are fit to read. This Class must use

Dilworth's

Dilworth's Spelling Book & the Spelling Dictionary. If the Class be small they may recite their lessons together, or in two or three divisions, as is most convenient, each Scholar spelling a certain number of Words; & when they Spell out of Book to rank by Competition, the best Speller to take the right hand, which will excite emulation & make them attentive to learn.

This Class must first of all be instructed in the Accent & true pronunciation of every Word with the different sounds of the Letters as they are variously combined forming Syllables; and in the next place they must be taught to spell well, for this purpose they must be exercised to Spell words both in & out of Book, & be taught by heart the Rules of true Spelling & pronunciation.

As good Spelling is essential to good Reading, the Children in this Class must not be pushed on too hastily into the Reading Class

Class; but after going through Dilworth both in & out of book, they ought also to go carefully through the Spelling Dictionary, in order that they may be well grounded in Orthography before they proceed farther.

3.d Reading Class including Children from their beginning to read until they are able to read distinctly & readily. This Class like the Spelling Class, if not too large, may recite their lessons together, each Scholar in turn reading a verse, or a certain number of sentences. They must begin with the easy lessons in Dilworth, then read Esop's Fables twice through, first the Fables only & then the Fables with their applications; & lastly the New Testament, beginning with the first Chapter of St. John's Gospel.

Great care & pains ought to be taken with this Class, to teach them to read correctly & distinctly, by a strict attention to the proper pronunciation of every word, and by

carefully

carefully observing the Pauses Emphasis & Cadence. To enable them to read with greater exactness & propriety, they must be taught the rules of Prosody & Punctuation, which they must commit to memory & put in practice in reciting one lesson, at least, with the rules, every day.

4th Grammar Class to learn a part of Dilworth & part of Dr. Lowth's Grammar by heart, particularly the rules of Orthography and Syntax. At the same time they are to be put to Writing; part of their time to be employed in Writing, part in reading the Spectator or some other prose author, & part in learning Grammar. As soon as they have got the principal rules of Grammar by heart, they are immediately to apply them to practice by Parsing two lessons every day. The five first rules in Arithmetic are like=wise to be learned by this Class, after they have gone through the Grammar.

5th The Junior Class are to devote a certain portion of their time for further Improvement in Reading & Writing, & the remainder to be employed in learning Arithmetic, both vulgar & Decimal, the Extraction of the Square & Cube Roots, the four first books of Euclid in the Preceptor, Book Keeping, Trigonometry, Mensuration of Superficies & Solids, Surveying Navigation &c. &c.

6th The Senior Class are to begin with reading Duncan's Logic, then to read Holmes's Rhetoric & Poetry (or instead of these they may read Newberry's Logic Rhetoric & Poetry) then the Essay on Elocution in the Preceptor & the Art of Speaking. A proper attention to the rules of good reading both in prose & verse must be paid by every Scholar in this Class, as also to good Speaking and Composition; for this purpose they must frequently write exercises, compose Theses & Orations & deliver them privately & at public examinations.

As it is of the highest importance for Scholars to understand their mother Tongue & to be able to Compose read & speak well; too much pains cannot be taken to improve them therein, & to teach them to Write a good hand. The Spectator & other English Classics, both in prose & verse, are to be read occasionally both by this & the Junior Class, in order to perfect the pupils in the Arts of good reading and Composition

The Compend of Chronology & History in the Preceptor is next to be read, then Ferguson's Astronomy & Salmon's Geography, the History of England, the Roman History, Robertson's History of Charles the fifth, Rollin's Ancient History & Watts's Improvement of the Mind, or such of them as can be most easily had; Lastly they must Study Hutcheson's Compend of Moral Philosophy, & Ferguson's Natural Philosophy

A Discourse
Delivered in the Court House
Bridgeton
On the acknowledgment of our
Independence & conclusion of Peace
with Great Britain
1783

Friends & Fellow Citizens

As I have had the honour of Addressing you publickly in this place, sundry times, since the commencement of the late glorious Revolution; permit me to say a few words to you on the present occasion. And as we are now met, for the purpose of expressing our Joy & satisfaction, in the late official Intelligence we have recieved, of the explicit acknowlegement of our Independence by ~~all the powers of Europe~~ [Great Brytain,] & the final conclusion of a fair & honourable Peace; I cannot improve the few moments of time you are pleased to allow me, more usefully to you, or satisfactorily to myself, than by recapitulating some of the most important transactions, that have taken place in the course of this interesting period, & [enumerating some of] ~~the~~ benefits that will result to us, from the present happy establishment of Peace, freedom, & Independence.

It is well known to you all, that the arbitrary & oppressive measures of the British King, having forced us to a constitutional opposition, eighth years is ~~not yet~~ [hardly] elapsed, since, by openly waging War against us, we were compelled to resistance by force of Arms, & to risque [the]

the Issue of a just & righteous cause, under the direction of Providence, to the uncertain event of War. On the ever memorable 19th of April 1775, the mercenary Troops of the Tyrant of Britain, first shed the blood of the innocent Inhabitants of Concord & Lexington, & thereby kindled the flames of War in ~~our Country~~ America.

No Country perhaps in the world, was ever in a more delicate situation than America at this period. Informed & discerning minds, saw the most miserable servitude on the one hand; & on the other, that they must be stripped of property, & suffer an ignominious death, without such a coincidence of circumstances, as nothing but Providence could accomplish. They saw one of the most powerful nations upon Earth, whose fleets covered the Ocean, whose flag had waved in triumph thro' the four quarters of the Globe, ready to dart all her thunder against them; at the same time we were without Ships, without Arms, without cloaths, without money, without officers, without discipline, without a single fortification; a very considerable faction ready to join our Enemies, exposed thro' an immense frontier to the irruptions of Savage tribes, whose lust of blood was daily stimulated by all the Arts which an unfeeling policy could dictate; while a herd of Slaves were

urged

urged, by the insidious offer of freedom, to plunge an assassin's Dagger, in the bosom of domestic security. In this Crisis, however, the good Genius of America determined her to risque every thing, rather than submit to the galling yoke: And the War continuing to rage, with increasing rancour & violence on the part of Britain, laid us under an absolute necessity of Declaring ourselves Independent States, which was done the 4th. of July 1776. From that Æra untill the 6th. of February 1778, the United States, under the guidance & direction of their Foederal Head the Congress, alone & unsupported, withstood every effort of the British Arms & of ministerial intrigue. Amongst many singular instances of consummate wisdom & sound policy in our Councils, & of astonishing valour & fortitude in our Troops, in the month of October 1777, on the plains of Saratoga, equally famous with the plains of Narva & Pharsalia, Lieut. Genl. Burgoyne & his whole Army, were forced to surrender to the victorious Arms of the United States, which gained them immortal honour, & laid the sure foundation stone of American liberty. The French Alliance favoured our cause & strengthened our hands. Lewis 16th. that illustrious protector of the rights of human nature, with a magnanimity worthy of himself & honourable to us,

became

our generous friend & associate in the War.

After experiencing many alternate vicissitudes of victory & defeat, the usual fate of War, the repeated successes of our Arms in the Southern States, & the taking of Lord Cornwallis, with the flower of the British Army at York Town in Virginia, by the united forces of America & France, the haughty pride & arrogance of the British monarch became humbled, the domineering spirit of that nation subsided, proposals for a fair & equal negociation were made, by the English Ministry to the Beligerent powers, & in the course of the last six months, England has consented to a free & unconditional acknowlegement of our Soveriegnty & Independence, & accepted of very honourable & advantageous terms of Peace, for us our Allies & associates in the genl. cause.

Such in a few words, (for I mean not to descend to particulars,) are the grand & important events, which have crouded in upon us, in swift succession, for eight years past. Events! teeming with the fate of millions, & in their consequences highly interesting to all mankind! The closing Scene of this magnificent Drama, (I mean the conclusion of Peace,) in particular, affords us the most pleasing & beneficial prospects — At peace with all the world, our freedom & Independence fully established & perfectly secured. Having taken our equal station amongst the

the Sovereignties of the Earth, & by the policy of our Governments, the wisdom of our Councils, & the bravery of our Arms, acquired a shining Character & growing reputation abroad; we are now left at full liberty, to improve those blessings & advantages, with which an indulgent Heaven has been pleased, graciously to reward our just & virtuous efforts.

Our foederal Union & Republican forms of Government, have placed us in a situation every way preferable, to our former connexion with, & subordination to, a British monarch. They are much more favourable to purity of morals, & better calculated to promote all our important Interests. Artificial manners always prevail in Kingly Governments; & royal Courts are reservoirs from whence dissimulation, pride, luxury, & extravagance, deluge & overwhelm the body of the people. On the other hand, Republics are favourable to sincerity, frugality, industry & simplicity of manners.

The Arts & Sciences which languished under the lowe prospects of Subjection, will now raise their drooping heads. — It is the happiness of our present Constitution, that all offices lie open to men of merit of whatever rank or condition; & that even the reins of State may be held by any Citizen, possessed of

of abilities equal to the important station. We are no more to look up for the blessings of Government, to hungry Courtiers or the needy dependents of British Nobility, but must Educate our own Children for these exalted purposes.

When subject to Britain, we had scarce any other share in Government, but to obey the arbitrary mandates of a British Parliament. Now, the Independence of our Country holds forth every allurement to induce us to cultivate literature, & improve the human mind. Honour with her dazzling pomp, Interest with her golden lure, and patriotism with her virtuous zeal, jointly call upon us now, to qualify ourselves & posterity, for the Senate, the Bench, the learned professions, & all the departments of civil Government

The times in which we live, & the Governments we have adopted, conspire to fan the sparks of genius in every Breast, & kindle them into flame. When like Children we were under the Guardianship of a foreign power, our limited attention was naturally engrossed by Agriculture, or directed by the love (punish) of wealth. In this state, the powers of the Soul, con=tracted by narrow local objects, or benumbed with

ease

ease & indolence, sunk into selfishness, sloth, and effeminacy. Enterprises, dangers, & proper opportunities, give scope to active virtues, & rouse the mind to such vigorous exertions, as command the admiration of an applauding world. Rome when she filled the Earth with the terror of her Arms, sometimes called her Generals, from the Plough; in like manner, our late glorious struggle for liberty, has drawn from obscurity many illustrious characters, which will dazzle the world with the splendor of their names. I appeal to you all, whether you do not feel an elevation of Soul, when you reflect, that you are no longer subject to a foreign will, but possess the powers of Self Governmt; & are called upon to take an active part, in directing & supporting the Sovereignty & Independence of our own State, & of all the States in Union.

The weight of each State in the foederal scale, will ever be proportioned to the abilities of its Delegates in Congress. The dignity & respectibility of every separate State, will likewise depend on the wisdom & skill of its rulers. Hence a noble emulation will take place, each State striving which shall produce the ablest Statesmen; most

accomplished

accomplished Senators, & best qualified Magistrates. From the joint influence of all these combined causes, it may strongly be presumed, that learning will flourish throughout our United States, & that our Independence will be an illustrious æra, remarkable for the spreading & improvement of Science.

But, the greatest advantage to the Citizens of the United States in general, from the happy establishmt. of Independence, & the general Peace wh. we are now celebrating, will arise, from the encrease of Trade & Commerce. In a very short space of time, we may expect to see, the Colours of France, Spain, Holland, Britain, Portugal, Sweden, Denmark, Russia & those of every other maritime power, waving on our Coasts; whilst the thirteen Stripes are unfurled by Americans, in the remotest harbours of the world. Our Merchants no longer confined to Trade with the small Island of Britain, will explore every quarter of the Globe, in quest of riches. Our numerous floating Storehouses, pursuing the new & trackless paths of the Eastern & Pacific Oceans, will return into our ports, freighted with the Silver & Gold of Mexico & Potosi, the Sparkling Diamonds of Golconda, & all the gay & beautiful manufactures of

of Eastern delicacy & refinement. wealth, plenty, and all the elegant conveniences of life, will daily flow in upon us, from the free trade we now have with all the world.

Our freedom & Independence, will naturally tend to fill our Country with Inhabitants. Where life, liberty, & property, are well secured, & where Land is easily & cheaply obtained, the natural increase of people, will be very great. Add to this, the Inhabitants of other Countries, becoming acquainted with our excellent forms of Government, will emigrate by thousands. In their native Lands, the hard earned fruits of uninterrupted labour, are scarcely equal to a scanty supply of their natural wants; & this pittance is held on a very precarious tenure. while our Soil, may be cheaply purchased, & will abundantly repay the toil of the Husbandman, whose property no rapacious Landlord dare invade.

Such will be the fruits of our glorious Revolution, that in a little time gay fields adorned with the yellow robes of ripening Harvest, will smile in the remotest depths of our western frontiers, where impassable forests now frown over the uncultivated Earth. The face of our interior Country will be changed, from a barren Wilderness into the

the hospitable abodes of peace & plenty. Cities also, will rise majestic to the view, on those very spots, which are now howled over by savage Beasts, and more savage Men.

If such will be the advantages of the Independence & Peace we now enjoy, what an honor must it be, to every one, who has taken an active & decided part, in bringing about so glorious a revolution? What inward pleasure! what Heart-felt satisfaction! will dilate the generous breast of every man, who voluntarily engaged in a cause so intimately connected with the happiness of mankind. Had I the genius & eloquence of a Grecian or Roman Orator, how justly might I, on this occasion, employ those shining talents, in celebrating the praises of those illustrious Statesmen & Heroes, who stood foremost, & were the greatest actors, in this affecting scene? The names of Hancock, Adams, Franklin, Jay, Laurens, Washington Greene, Gates, & many others, can never be forgotten! Posterity will know them all. The faithful pages of the ablest Historians, will stamp immortality on their Characters. Painters & Statuaries will ~~transmit~~ preserve their busts & portraits, with those of Cato, Brutus, Hamden & Sidney, to remotest ages. Our Children

and

* The name of our illustrious Commander in Chief Genl. Washington, who conducted the American Army thro' the whole of this important Revolution, should be mentioned with peculiar veneration on this occasion. His heroic Acts will shine with such distinguished lustre in the annals of America as will cast a shade upon the atchievements of the most renowned Commanders of antiquity. The fame of an Alexander & a Cæsar who fought only to conquer & enslave the world, will be wholly eclipsed by the persevering intrepidity and =

× When I anticipate in imagination, the future glory of my Country, & the illustrious figure it will soon make on the Theatre of the world, my Heart distends with generous pride for being an American. The renowned Empires of ancient Rome and modern Russia, are not to be compared with the Empire of these United States, for extent of territory. The fruits of our toil & danger, is well worth the labour & care we have bestowed upon it. Away then with all the peevish & unreasonable complaints, of the hardness of the times, & the burthen of the Taxes. The prize for which we contended, would have been cheaply purchased, with ten times the expence of blood, treasure & difficulty, it hath cost us.

= brilliant successes of our Hero, who fought in the cause of liberty, & cong. in the defence of his Country, & in support of the rights of human nature.

and our Children's Children, will reverence their sleeping Dust. And may not some of us, indulge the ~~pleasing~~ flattering Idea, that the public places we have filled, & conspicuous stations a grateful Country has enabled us to occupy, will probably procure admission to our names, amongst the venerable Sages we have just now mentioned. Ample reward to a generous Soul, for all the expence, toil, & danger, he may have sustained, in this glorious contests! *

Peace be to the _Manes_ of a _Randolph_, _Forbes_, _Drayton_, _Warren_, _Montgomery_, _Nash_, & all the other worthies & warriors, who have sacrificed their lives, a freewill offering, in the service of their Country, to the fair _Goddess_ of Liberty. Their undaunted efforts in the hour of greatest danger & tribulation, both in the Senate & the Field, have made their Deaths a bed of honour, have planted unfading Laurels on their Tombs, & rendered their memories precious to future ages. If there be real honor in life, if there be consolation in Death! it is, to live with such Patriots, to mingle our Ashes, with such Heroes. ✗

To conclude, I congratulate you on this final ~~conclusion~~ ratification of a general Peace, upon honourable & advantageous terms. Having for _Eight_ years, weathered the storms of Adversity, we have at last,

by

by the smiles of Providence, arrived safe in the calm haven of peace & security. A new and extensive Empire, hath risen up under our fostering hands. It is now our turn, to figure on the face of the Earth, & in the annals of the world. May it be our ~~care~~ endeavour to act agreeably to the dignity of our new acquired station! — The Temple of Janus being now shut, our next care should be to cultivate the Arts of Peace, & to open wide the portals of the Temple we have raised to freedom, as an Asylum to the miserable & oppressed, of every nation & every clime. Above all, may we never cease, with the deepest gratitude, to reverence & adore that kind & beneficent Being, who hath conducted us safely thro' much tribulation, hath redeemed us from the Iron shackles of Despotism, & unfolded to our view so fair a prospect of temporal grandeur & felicity.

Mr. President, Ladies & Gentlemen

By appointment of this honourable Society I am to entertain you now with a dissertation on the Laws & local Constitutions of this province; a subject in which we are all deeply interested, & which it behoves us all to be well acquainted with, but unhappily for us has been little attended to by the generallity of those most capable of giving us any adequate Ideas thereof. It cannot therefore be expected, that a person bred to a profession altogether foreign to that of the Law, & till very lately entirely unacquainted with the simplest maxims of English Jurisprudence or American Legislation, without the assistance of any writer on the subject, can have it in his power (however ardently he wishes it) to do justice to so intricate & interesting a subject. In compliance however with your request I attempt the task, difficult as it is, & that I may proceed methodically therein I shall 1st mark out the outlines of a Juridical history of our province by taking a chronological view of the state of our provincial Laws & legal Institutions & their subsequent alterations at different periods of time, and 2dly make some strictures on the most remarkable of our Laws by pointing out their defects & mentioning such alterations and amendments therein as appear necessary.

In drawing the outlines of a Juridical history of our province it will be proper in order to proceed with more clearness

&

& precision to divide it into 4 periods. The 1st period to commence with the original Grant of the Soil & Government of this province by King Charles 2d. to His Brother James Duke of York in 1664 & end with the division of it into two separate Governments under different proprietors in 1682 the 2d. period from the division of the province into the two unconnected proprietary Governments of East & West Jersey till the surrender of both to the Crown of England in the 2d. year of Queen Anne in 1702 at which time it became a royal Government connected with New York; the 3d. period from the time of the surrender till it was disunited from New York & made a distinct Government by itself in 1738. The 4th period from the time of its becoming a distinct Government by itself to the present time.

King Charles the second having granted both the Soil & Government of this province to his Brother James Duke of York (afterwards King James the 2d.) the 12th of March 1664 his Royal highness did, in June following, Grant the same to John Lord Berkeley & Sir George Carteret who thereby became joint proprietors of New Jersey, & for the better settlement thereof they agreed upon a certain plan of Government, the substance of which (exclusive of what respects the settlement & location of the Land) is as follows, the Proprietors appointed the Governor who by advice of his council might appoint a deputy. The Governor likewise chose his council but the proprietors appointed the Secretary & Surveyor General, they likewise granted full liberty of conscience to all, directed an Annual

election of Representatives who with the Governor or his deputy & the council made the general Assembly of the province. Which general Assembly was empowered ~~to~~ to appoint the times & places of their meetings; to enact all Laws & constitutions necessary for the well govern-ment of the province & them to repeal, provided they were consonant to reason & as near as coued be agreeable to the Laws of England; provided also they were not agt. the interest of the Lords proprietors nor repugnant to the article for liberty of conscience; to erect Courts of Judicature & appoint their officers with their salaries & perquisites; to Levy taxes for support of Government & other purposes; to make division of the province into Counties parishes &c: to form a militia & naturalize foreigners

The Governor with his council were to see that all ministers & officers civil & military execute their several duties acc.d to the Laws in force, as also to nominate & Commis-sionate all officers both civil & military

The principal Laws enacted by the Assemblies during this period were militia acts similar to those now in force; appointing & regulating ordinaries, by w.ch it was enacted that no person except licensed innkeepers should sell any strong drink in less quantities than 2 gallons (afterwards altered to one Gallon) under the penalty of ten shillings; for regulating weights & measures; prescribing the oaths of fidelity & allegiance; for erecting Courts of Sessions in each

County which were to be held twice a year, from which lay no appeal under £20; also a Court of Assize to be held once a year for the whole province & monthly Courts to be held the first Wednesday in every month for recovery of Debts under forty Shillings before two or three persons chosen annually for that purpose one of which to be a Justice of the peace & two officers a Clerk & a messenger. For appointing Grand Juries & Surveyors of the highways. For ascertaining the Governor's yearly Salary & the mode of levying Taxes; to these must be added a long list of criminal Laws enacted during this period as 1st Resisting the Authority established by the Lords proprietors wch subjected the delinquent to a fine or corporeal punishment at the discretion of the Judges. 2d Arson for wch the criminal was to be committed till full satisfaction was made & if unable to make reparation of damages to be corporally punished at discretion. 3d Murder, false witness, & manstealing and unnatural Crimes for all wch the delinquents were to suffer death 4th Burglary & Robbery for the first offence to be burnt in the hand with the letter T, & make full satisfaction for the goods stolen &c: for the second offence to be branded in the forehead with the letter R, & for the third offence put to death as incorrigible 5th Theft, here treble restitution was to be made for the first sec & third offences, or if the thief was unable to pay to be sold, & if he proved incorrigible was punished with death.

6 Witchcraft & Striking or Cursing of Parents both which were punished with death. 7 Rape for w.ᶜ the agressor was severely punished or put to death at the discretion of the Court 8th Adultery penalty divorce corporal punishment or banishment as the court shall direct 9th Fornication for this at discretion any fine or corporal punishment was to be inflicted 10th Drunkenness for the first offence fined 1/ for the second 2/ & 2/6 for each after or be put in the stocks. 11th Cursing or swearing fined 1/ 12th Lying, fine 10/ for the first offence & 20/ for the second or if unable to pay to be put in the stocks. Lastly cutting Timber for which the offender was to pay £5 a stick.

Thus much for the legal history of our province during the first period while the province continued one Government from 1664 to 1682; let us now proceed to the second period when it was separated into the two distinct Governments of East & West Jersey occasioned as follows. Lord Berkeley in 1673 granted his moiety of the province to John Fenwick in trust for Edward Billinge who in 1674 granted the same to Wm. Penn, Gawen Lawry & Nicholas Lucas. Sir George Carteret still holding his moiety. In 1676 Penn Lawry Lucas & Billinge joint proprietors of one undivided moiety & Sir George Carteret of the other by their Indenture Quintipartite made a partition of the province into East & West-Jersey. The Eastern division being thereby confirmed to

Sir George & the Western half to the other four. In 1678 Sir George Carteret by Will devised his half or the Eastern Division of the province to certain Trustees to be sold for payment his debts, accordingly in 1682 the trustees convey'd the whole 12 proprietors who at sundry times the same year conveyed a half of their shares to 12 other proprietors so that both the soil & Government of the Eastern division of the Province now belonged to 24 proprietors which was confirmed to them by a new Grant from the Duke of York & recognised by K: Charles 2

The 24 proprietors thereupon erected East Jersey into a sepa Government of which Perth Amboy was made the seat & constitu a particular form of Government in 24 articles called the fundamental constitutions of the province. the substance of w: is, that the legislative body of the province should consist of a Governor appointed by the proprietors & a great Council con sisting of the 24 proprietors or their deputies & 144 representativ chosen annually by the people; that the Governor's counci should consist of the 24 proprietors or their proxies & 12 freeme chosen by balot from among the freemen of the great Counc that all Laws should run in the name of the Governor proprietors & representatives of the people; that all officers the Secretary Register, Treasurer, Surveyor General Marsha Sheriffs Judges & Justices of the peace be appointed by the Governo

& Council; that full Liberty of Conscience be allowed; that an exact register be made of all Grants, Conveyances, Bonds, Wills, Letters of Admr. Births, marriages, Burials & servants; that no person be divested of his Liberty or property but by the Judgment of his peers, nor justice be delayed; that all trials should be by a Jury of 12 men & in capital cases a Bill should first be found by a Grand Jury & then the matter tryed by 12 men; & that acts should not be in force longer than 50 years unless renewed by the Assembly

The Principal acts passed in this Government were, An Act appointing a Sheriff yearly for each county. An Act to erect a Court for the trial of small causes under 40s to be held monthly & consist of the same persons as before mentioned, only allowing a Jury if desired by either party provided the party desiring it pay the charges thereof. To erect County Courts or Courts of Sessions to be held 4 times (afterwards restrained to twice) a year, for trying all causes civil & criminal not extending to life or limb & that all process be served at least six days before the first day of Sessions. To erect a Court of Common Right or Supreme Court of the province, for trying all causes civil criminal & capital to which all suits of five pounds & upwards might be removed from other Courts; In these Courts all Writs & process run in the King's name. Next follows a code of criminal Laws very similar to those of Moses

with Acts against profaning the Lord's Day, Drunkenness, Swearing, Adultery, Fornication &c which differ from those formerly mentioned in having larger penalties affixed thereto, as for profaning Lord's day fine 5/ for the first offence & 10/ for the second, for Drunkenness fine 5/ or set 6 hours in the stocks, for Swearing fine 2/6 or set three hours in the stocks, for fornication fine £5, for Adultery from five pounds to fifty &c. To these succeed Acts for mending Highways & Bridges, concerning Fences, for regulating ordinaries, for building Goals, raising Taxes, patenting Land, for establishing a Militia, for maintaining poor prisoners which enacts that any person having no visible estate being imprisoned for debt his creditor shall allow him eighteen pence a week for his maintenance for three months & if he dont pay the debt within that time to become a servant to his creditor till he has discharged the same; for taking up runaway servants for wch master or mistress to pay 20/ reward & six pence per mile for bringing home; for establishing officers fees, for establishing Schoolmasters (a most excellent act!) obliging all persons to pay a proportionable share of a rate for maintaining a school-master in every town or precinct; and many other acts which I shall omit.

The proprietors of West-Jersey also constituted a plan of Government or fundamental Laws similar to the Concessions of the Eastern Proprietors, by which they divided the province into 100 proprietaries to be laid out in Tenths & directed one representative to be chosen yearly yearly by the freeholders of

each propriety, which Assembly were to appoint ten of themselves to be commissioners of State. This plan of Government was the most popular of any ever established in the Jerseys, for all officers of trust were annually appointed by the Assembly & were accountable to them for their conduct. Liberty of Conscience was also ordained as well as the security of person liberty & property by Trial by Juries the probate of Wills & securing Intestates' Estates

The principal Laws passed in West Jersey were, an act for preventing clandestine and unlawful marriages; for regulating Servants; for subjecting Lands to the payment of Debts on defect of personal estate; for erecting 4 Courts of Sessions yearly; for the recovery of Debts under 40/ before one Justice; for Erecting a Supreme Court of Appeals for the province to be held twice a year at Burlington; for erecting a Court of oyer & Terminer; for raising money by a poll; for fixing the Interest of money at 8 pr Ct; for regulating weights measures & Toll at mills; for Establishing provincial Judges; against Burglary & other crimes similar to those enacted in East Jersey.

Thus stood the general frame of interior polity in the two Governments of East & West-Jersey at the time of the surrender of both in the second year of the reign of Queen Anne when the third period of our legal History commences

This remarkable event of changing the proprietary into a royal Government made great alterations in the political constitution of the colony. for now the gift of all offices whether civil or military became vested in the Crown of England or its representative the Governor. All the Laws of both provinces became virtually repealed by the act of Surrender, though many of the Ideas & maxims of those Laws were afterwards adhered to, or incorporated with the subsequent laws of the province & on this account it became necessary for us to take a short historical review of them.

The Conditions of the Surrender with the Queen's Commission to Lord Cornbury & her Instructions accompanying it are now esteemed the fundamental Constitutions of the province & all commissions & Instructions to succeeding Governors are principally copied therefrom.

Had Lord Cornbury's abilities been equal to his birth & Interest instead of listening to the votaries of faction and fomenting the sparks of civil discord, he would have had it in

his power to render signal services to this province & laid a foundation for future prosperity; but that became the business of his amiable successor Lovelace. Besides being the son of the celebrated Chancellor Clarendon who wrote a memorable history of the rebellion & merited highly in the revolution, Lord Cornbury was first Cousin to Queen Anne.

The distinction of the two provinces of East & West Jersey being in a legal sense henceforth laid aside, we now enter upon a more uniform system of legislation. And as the limits of this discourse will not admit of descending to particulars, shall therefore only take a general view of the Laws during this & the ensuing periods.

The only public act of Importance passed during Cornbury's Administration was for suppressing of Immorallity such as Curseing & Swearing, Sabbath Breaking, Drunkenness, Fornication & Adultery, which differed from those formerly passed in the propriety Governments only in the penalty annexed thereto. In Governor Lovelace's time an act was passed for regulating the Qualification of Representatives & for the relief of the poor. In Ingoldsby's time for division of the province into Counties. About this time the first Act for the emission of paper currency in this province was passed

The care of the legislature respecting it in this & all succeedin
emissions being to render the sinking of it secure & to prevent
the currency failing in value, by changing the bills as they
become ragged & torn & allowing no re-emissions on any acco
whatsoever; it has thence from the beginning preserved its
credit & proved of great service to the inhabitants. The securit
when issued on loan were double the value in Lands & treble
in houses & 5 p Ct. Interest, but for many years past there
has been none current on this footing. The funds for sinkin
by tax the money now current are mortgages on the estates
real & personal in the province, hence they are secured as
firmly as the province itself & are a legal tender to all persons
in the province. During Governor <u>Hunter's</u> long & litigious
Administration many acts of a public nature were pass
which are now in force as an Act for regulating of Slaves
Servants & taking up of Deserters; also for preventing
Corruption in the Courts of Justice, & malicious prosecution
by Informations; for ascertaining the Qualification of Jur
for confirming the Granting of Letters of Administration; Con
Swine; for Building of Goals & Court Houses; for laying out
repairing roads & for Building Bridges; for Choosing Asse
& Collectors & for preventing clandestine marriages

In <u>William Burnet's</u> time were passed the following
public acts viz: An Act for security of Government by which all offi

& others thereto requested or obliged to take the Oaths of Allegiance Supremacy & Abjuration, & take & subscribe the Declaration against Transubstantiation on pain of being adjudged popish recusants Convict; also an act for preventing a multiplicity of Law Suits; for preventing the killing of Deer out of Season, & for the better regulation of Elections; a bill was likewise prepared in Burnet's time which though rejected by the lower house on second reading is too singular to be omitted; it was an act against denying the divinity of our Saviour, the doctrine of the blessed Trinity; the truth of the holy Scriptures, & spreading atheistical Books. Assemblies in the Colonies have rarely troubled themselves with these subjects, perhaps never before, or since which affords ground to believe it arose from the Governor's motion, who had a turn that way, was the son of the celebrated Bishop Burnet & had himself wrote a Book to explain the Revelations & by some is said to have been the author of a humorous Piece called the History of the Devil

There are but few acts in force that were passed during the short administration of John Montgomerie & none during that of Governor Cosby's. We shall therefore pass on to the forth & last period of the Juridical history of our Province which commences with Governor Morris's Comm^n.

who was the first Governor of New-Jersey separate from New-York in 12th Year 1738 —

Among the first acts of a public nature passed in Governor Morris's time was an Act for the trial & punishment of persons guilty of Larceny under the value of 20/; An act for regulating Taverns & for fixing the rate of Interest at 7 ꝑ Ct. as it now stands; for enabling Creditors to recover their just debts from persons who abscond, this act has twice expired & been renewed with some alterations & additions; an Act ~~for~~ to erect & establish Courts in the several Counties for the trial of ~~small~~ causes under £5 value by Summons or Warrant before a single Justice with privilege of a 6 men Jury if requested & the sum in dispute exceeded 40/. During the Proprietary Governments small causes were tryed in their monthly Courts as before observed but they were not to exceed 40/ In West-Jersey Government this was to be before a single magistrate & thus stood the mode of recovering small debts till the making the above act which expired & was renewed several times. What alterations this mode of recovering debts underwent afterwards I shall hereafter take notice of. Next follow Acts for taxing pedlars; respecting the settlement of the poor against burning the woods; for appointing Commissioners to

take special Bail; for subjecting real estates to the payment of Debts; for preserving of Timber, & for acknowledging of Deeds.

During Belcher's Administration, the following are the most noted acts of a general nature; An Act enabling Judges & Justices to tax Bills of Cost; an Act to oblige Sheriffs to give security & take the Oaths; an Act to prevent actions of fifteen pounds & under being brought into the Supreme Court with acts for the revival of an Act for establishing Courts for the trial of small causes; for enabling Creditors to recover their just Debts from persons who abscond themselves, this act is still in force; for preventing Lotteries Gameing & Horse Raceing, & an insolvent Act; this last act has been from time to time renewed, being always of a temporary nature. I pass over the many acts passed during the last War, for raising & pay of Soldiers, for emitting Bills of credit, & sinking the same, as being all calculated for the exigencies of Government & consequently of a temporary nature. In Governor Boone's time a new act for establishing Courts for the trial of small causes was passed differing from the former acts of this kind in extending it to actions of £6 instead of five

In Hardy's time an act was passed to prevent Horse-Raceing & Gameing

The most noted acts passed during our present
Governors (Franklin) Administration are an Act for preventing frau[d]
by Mortgages; for granting a bounty upon flax & Hemp; fo[r]
repealing the practice of the Law which was disallowed by
his majesty. Several acts of this kind had been passed befo[re]
but were allways disallowed, this is sufficient to convince
of the great Influence the gentlemen of the Law have in ou[r]
province. The next I shall take notice of is an Act for
laying a Duty on Slaves imported into this Colony, which
~~before~~ was £10 but ~~now~~ afterward altered to £15. also for erecting
Courts for the tryal of small causes. We have before obser[ved]
that these Courts were originally extended to causes of 40/ only
then to actions of £5 - afterward to £6 - & by this to
actions of £10 - being limited to 3 years, his majesty
however was pleased to disallow it before its expiration;
to supply the place of which the legislature in 1771 passed an
act for recovering Debts from £6 to 10 in an expeditious
manner in the inferior Courts of Common Pleas which
is now in force. In 1768 an Act was passed for the septennia[l]
election of Representatives; also an Act for the tryal of Slaves
for murder & other capital Crimes. In 1769 passed an Act respecting hog stealing & so it not felony for first offence. In 1770 the famous riot
act was passed also an act respecting the recovery of Debts
under fifty pounds

The only Act passed of a general tendency during the last sitting of the General Assembly was an Act to regulate the practice of physic & surgery within this province; as this act is of a singular nature & the second of the kind ever passed by any Assembly in the Colonies it would be both curious & instructing to enquire a little into the nature & design of it & the ends it will be likely to answer, but this belongs to the second general head of our discourse to which I now proceed.

Having in a short & imperfect manner taken a historical review of our provincial Laws I am according to my original plan in the next place to make some Strictures on the most remarkable of them. Here a copious field for criticism opens itself to our view but the limits of this Essay will not permit me to wander far into it. I shall therefore content myself at present with a few general remarks & leave the full discussion of this subject to the abler hand of some future orationist. I shall begin with the consideration of those acts of Assembly that respect the levying of Taxes that being a principal part of the business of our provincial Assemblies

Taxes being the price which every man pays for the security of those rights & privileges arising from Society, it is evident that every individual ought to contribute a proportional share towards the support of that Government under which he lives. The right of Taxation being therefore evident, the only thing to be considered by the legislature is the mode of raising the Taxes so as that every member of the community shall pay an equable proportion thereof. Divers methods have been tryed by our legislators. In the time of the proprietary Governments a Law was made in West-Jersey (as formerly mentioned) for raising a Tax by a poll the only Law that was ever enacted in this province for expressly raising a Tax in that manner. This appears to be a very injudicious method of Levying Taxes, no regard being had to the person's circumstances & estate, the poor paying as much as the rich, a peasant as a nobleman. It has therefore been deservedly rejected by later legislators. The romans in the early days of their monarchy paid tax by poll, till Servius Tullius instituted that master piece of policy the Census or valuation of Estates, a method ever afterwards followed by that people in raising Taxes & perhaps from them introduced into other nations particularly the English.

The inhabitants of this province being ~~principally~~ mostly Farmers & Graziers & their estates lying principally in Lands & Cattle

the method generally adopted ~~till of late~~ in its infancy by our Legislators was to levy the Taxes upon the Land & Cattle only. While the province was but thinly inhabited & little else but Agriculture encouraged this mode was sufficiently exact; but as population increased arts, manufactures, & Commerce were introduced which rendered it necessary to devise other methods of levying the public Taxes; for the estates of Tradesmen Artificers & merchants lying chiefly in goods & utensils, while Land & Cattle only were taxable by Law such persons, though often the wealthiest people, were exempt from contributing that share towards the support of Government, which they, as members of the same, in justice were entitled to pay: this gave rise to the present mode of Taxation, or the doctrine of certainties, first established by Act of Assembly 24 of George the second but settled as it now stands by 10 Geo: 3 by which excellent method not only the farming, but the merchantile and manufacturing part, of the province, are subjected to taxation. But notwithstanding the mode of taxation at present adopted in our province is founded upon very equitable principles, yet it must be acknowleged that there

place manifest defects in those acts which establish the same; in the first place, by leaving so much to the discretion of Assessors which opens a door for injustice & exposes them to severe & unavoidable censure & 2dly in not well proportioning the certainties a poor single man with an old horse being made liable to pay as much and perhaps more tax than an opulent farmer possessed of a valuable plantation & every necessary implement of husbandry; to which I might add the severity of the Law respecting delinquents enjoining immediate distress & sale of Goods or for want thereof Imprisonment without any hesitation.

In the next place let us enquire a little into the propriety of those Acts which respect civil actions, particularly those which establish Courts for the trial of small causes; the recovery of large Debts in the Supreme & County Courts being mostly according to the Laws of England.

In our historical review we took notice of the original institution of these petty tribunals, by which it evidently appears they were in part copied from the hundred & County Courts in England, as their confining them to the cognizance of pleas not exceeding 40/ the exact sum to which those

Courts are limited to this day, & their being held monthly as those formerly were, but they differed considerably from them in the method of administring Justice being at first entirely confined to the summary mode of trial by evidence only, the Court consisting of 3 Judges chosen annually by the people a Clerk & a ministerial officer called a messenger, chosen in like manner. The process by summons without a Jury. Sometime after an addition was made to these Courts by allowing a Jury at the request of either plantiff or Defendant provided the party requesting it paid the charges thereof. But the most considerable alteration these Courts underwent was in the persons before whom these trials were held; for instead of 2 or 3 persons annually chosen for that purpose a single Justice of the peace was empowered to hear & determine these suits, from which however an appeal was permitted to the County Court. This mode was first adopted under the proprietary Government of West-Jersey & has continued ever since, the principal alterations that have taken place from that time to the present respect the value of the actions cognizable by these courts being at first as already observed only 40/ it was next extended to £5.., then to £6,, & lastly to £10,,

allowing a Jury of 6 men whenever the real Debt or demand exceeded 40/ which renders the proceedings of these Courts partly summary from the determinations of which appeals lie, & partly regular (or plenary as the civilians term it) the decisions of which being in some measure agreeable to the course of the Common Law are therefore declared final

The plan of these courts is entirely agreeable to the circumstances & genius of the inhabitants of this province; calculated to prevent a multitude of vexatious & dilatory actions in the higher courts, & at the same time to give honest creditors an opportunity of recovering small Debts without the expence & tedious circuity of a suit in a Court of Common Law. And the anxious desire that has been shewn to obtain the acts which establish this mode of recovering Debts proves clearly that the people in general are truly sensible of the advantages arising therefrom. But it is to be feared the remedy will in time prove worse than the disease & perhaps be attended with very ill consequences, as the method of proceeding in these Jurisdictions is greatly derogatory of the common law; as the large discretionary powers vested in every single Justice of the peace create a petty tyranny in a set of men entirely dependant on the Crown and affords too much room for ignorance avarice & ambition to sport with the

liberty & property of individuals, on which account our most gracious Sovereign was pleased to disallow of the late Act of Assembly for the recovery of Debts in these Courts to the value of Ten pounds. To remedy these inconveniences the Act, the tenth of George the 3d was passed prescribing an expeditious method of recovering Debts from £6 to 10 in the Courts of Common Pleas by which the tedious delays, and nice formalities, of a regular process in the common law mode are entirely obviated.

This amphibious method of Trial partaking, in appearance, partly of the nature of a regular Trial in a Court of Common Law, but more, in fact, of the nature of a summary Trial in a Court of Conscience, though intended to supply the place of the former ten pound act is found by experience to be attended with many more inconveniences than that. For 1st Suits of so difficult & intricate a nature as are often cognizable by this Act commencing from so many eccentric originations to be finally determined at one certain time & place unavoidably creates much confusion & perplexity in the proceedings & renders it almost impossible to have justice fully & regularly done to all parties concerned; To which we may add 2dly The needless waste of time

& money in keeping a whole county upon expences to wait the issue of a petty trial which might as well or better be determined in a less public manner with the assistance of a Jury of 6 men.

3.dly By encreasing the modes of prosecuting suits it likewise encreases the difficulty of obtaining a legal redress. By the common Law of England, strictly speaking, there is but one mode of proceeding now in use in all cases, which is that excellent method handed down to us from the earliest period of our constitution, of Trial by Juries. The civil Law is entirely ignorant of this method of Trial, all suits being determined in a summary way by Judges without the intervention of a Jury by that Law. As this mode is attended with much less time & expence than that of the common Law our Assemblies after the example of the British parliament have introduced it here in the determination of small & less important causes So that before making the act under consideration there were but two methods of proceeding, but this has introduced a third compounded of both the former. Considering therefore from what has been said on the one hand, the inconveniencies attending the mode of administring Justice, & on the other hand the evils that will probably ensue by enlarging the power of single magistrates it will perhaps upon the whole appear

most eligible to have this act repealed & the mode of recovering Debts &c to stand upon the same footing as After making the six pound Act

A third object of the Laws of our province which I shall take notice of is the support of the Poor. Laws of this kind are a credit to every community wherein they exist, as being founded on principles of humanity and disinterested benevolence, for our indigent fellow creatures; and perhaps no nation can boast of such wholesome and well regulated Laws for this purpose as ours

The several Laws which have passed respecting the poor differ principally in the mode prescribed for obtaining a legal settlement. The Act of 1740 admitted a settlement without any notice, that of 1758 required notice to be given in every case within ten days after coming into any precinct. This was found to be attended with many hardships & inconveniences to industrious indigent poor it was therefore altered by the Act passed in 1774 which is now in force & which agrees in many respects with the Act of the British parliament for the settlement & relief of the poor in England

I next proceed to the consideration of a very singular Law which I heartily wish for the credit of New-Jersey had never found a place in our legal System. The Law I mean is entitled an Act to prevent the destroying & murthering of Bastard Children. Both the preamble & enacting clause are almost literally copied from the Act of Parliament 21 James 1. c: 27. The principle on which it is founded militates directly against the natural sentiments of the human heart. By making the concealment of infamy evidence of murder it compels unhappy women to break through the becoming pride & modesty of their sex, & to be the first officious publishers of their own shame.

The exposition which the Act of Parliament has recieved by the humanity of modern Judges is a striking instance that cruel laws naturally tend to their own dissolution in the abhorrence of mankind. It is now the constant practice of the Courts to require that the body of the child shall be found, before any conviction can take place; & if it should happen, that the mother had any child-bed linnen, or other preparatives in her possession, prior to her delivery, it is generally admitted as a proof that no concealment was intended. Moreover it is not unusual to require

some degree of evidence that the child was actually born alive, before the ungenerous presumption, that the mother was the wilful author of the death of her new-born infant, is permitted to affect her. These humane deviations from the harsh injunction of the Statute have nearly amounted to a tacit abro-gation of it by reducing the rules of procedure thereon almost to those of common murder.

Dissertation &c: on the Laws of New-Jersey.

An Address

To the

Inhabitants of Cumberland County

Delivered at a Public meeting

May 1774

To

The honourable Jonathan Elmer Esq

At Bridgetown

Cumberland

Gentlemen

Before we enter on the business of our present meeting, which will be laid before you by the Committee, give me leave to say a few words to you on the present situation of public affairs

America has never seen a more critical period than the present. A daring & resolute retailer of Lord Bute's popish & despotic system of politics has, for a series of years past, assiduously endeavored, by every imaginable artifice to enslave us: but the freeborn Colonists who have extended the British Empire over this once savage Land fired with the love of liberty, have resolutely opposed every attack hitherto made to infringe their constitutional rights & privileges

As nothing in the present alarming situation of affairs can be entered upon by honest men with spirit & resolution till they are first convinced of the justice of their cause, let us without prejudice seriously enquire whether the present struggles of America are

ourselves.

defensible on principles of equity & the british Constitution? If we are wrong we ought to give up honorably before force extorts a submission; if we are right, let us act like true patriots & hold out to the last be the consequence what it will.

The original source of our present disputes is reducible to this single question — Has the parliament of Great-Britain a right to Tax America internally? If they have we are wrong in opposing them; if they have not we are under indispensible obligations to resist, and that they really have no such right will appear fully evident from the following single consideration — It is a truth too obvious to admit of being disputed that two perfect rights can never interfere. For to suppose they could would be to suppose that two persons might have a just right to one & the same thing which is inconsistent. — If therefore the parliament has a just right to demand our property we cannot in justice withhold it; &

if they have a right to take from us one penny
without our consent, by the same rule they have
a right to take all we have. From which
this consequence is demonstrabely evident that
we have no property at all, for, to use the
words of the celebrated <u>Mr. Locke</u> "what property
has any man in that which another has a right
to take from him when he pleases"?

It being evident then that the parliament
has no right to impose taxes on America, it
follows that their claim is no better founded
than the robber's who demands my money with
a pistol at my breast. For no proposition in
Euclid is more capable of demonstration than
that such a man has as good a right to the
money in my pocket as the parliament to tax
us without our consent. We are therefore
justified by the fundamental principles of
our constitution, by reason, by nature, yea

by God himself in opposing with all our might the payment of every such demand. The cause we are engaged in is good. We are only contending for our constitutional rights & privileges & that Liberty wherewith God hath made us free, & may he enable us to persevere therein with unshaken resolution till we gain the point. For we are actually reduced to the horid alternative either to acknowlege our:=:selves tenants at will to the British parliament or resolutely oppose them & matters seem to have gone so far that unless we tamely submit a civil war must inevitably ensue. A base & venal parliament stands constantly ready to rivet on us those chains which Lord North hath forged. In vain has Chatham plead, in vain has Camden reasoned, & in vain has Burke exhausted the powers of eloquence in demonstrating our right of exemption from parliamentary Taxation, they are perpetually overruled by a majority so that we have nothing to expect from parliament but a mean compliance with

every demand of the ministry. And as they have
declared their intention of enforcing their measures
with the sword & as hostilities are actually begun
in our Sister Colony of the Massachusetts Bay our
only dependance now is on our own strength &
unanimity & with confidence I speak it, if we
will but be firm & united we shall undoubtedly
succeed. The parliament may persist in
making Laws but the whole power of Great
Britain will never be able to enforce our com-
-pliance with them. — Courage then my
friends! Let us convince the world that Britons
will be Britons still in every age & every clime.
That we value our Liberties as dearer than our
lives. — No nation or people under heaven ever
drew the sword in support of a juster & nobler
cause than that in which we are now engaged, I would
therefore fain persuade myself that no one present
entertains the least scruples about heartily engaging
in defence of our common Liberties. It is not

our Sovereign we are opposing. It is not King George we mean to resist; we acknowlege ourselves his loyal subjects, we solemnly declare our firm attachment to his royal person family & Interest & are willing to risque our Lives in support of his Crown & dignity; but tis his corrupt & despotic ministry we oppose & I hope are all firmly resolved to oppose even at the expence of our lives & fortunes & I make no doubt that resolution & unanimity in so good a cause will render us invincable. Remember, my friends, the success that crowned our Opposition to the Stamp Act.— Call to mind the heroism of our ancestors who fled from Tyranny & persecution to this un-cultivated Land, fearing less from savage beasts & savage men than from slavery the worst of savages. Let us think of our posterity and transmit to them the fair inheritance of Liberty handed down to us from our glorious progenitors

Let us continually place before our eyes the shining example of those good old English patriots who by boldly opposing the arbitrary designs of their Soverign King James the 2d. & snatching the Iron rod of Slavery out of the hands of royalty itself saved the nation from destruction & secured to their successors those blessed privileges which they have enjoyed ever since the revolution under King William the 3d.. May the complicated Idea kindle the same flame of genuine patriotism in each of our breasts that glowed in theirs that we upon this trying occasion may sacrifice every private consideration to the public good: For, to use the words of a celebrated american patriot, "Whoever would give up <u>essential liberty</u> to purchase a little <u>temporary safety</u> deserves neither <u>liberty</u> nor <u>safety</u>."

If the parliament's claim of internal taxation be established either by our own consent

or a military force that moment we are transformed
into slaves. All our property will be at the ab-
-solute disposal of the house of Commons. Death
itself is an event devoutly to be wished for in
comparison of such a state. — Let us then act
wisely, of two evils choose the least & resolve
rather to *die* in the glorious cause of Liberty than *live*
ignoble slaves

And shall we tamely yield ourselves to bondage?
Bow down before those proud imperious Tyrants,
And bid them tread upon our slavish Necks?
No; Let this faithful *freeborn English* hand,
First dig my grave in liberty & honor,
And tho'. I found but *one* more thus resolv'd
That *honest* man & I would die together

Gentlemen of the Committee, Officers of the Militia & Gentn. Spectators

From what has now been read you see the long wished for but much dreaded period has arrived in which the connection between Great Britain & America is totally dissolved & these Colonies declared free & independent States. As this is an event of the greatest importance it must afford satisfaction to every intelligent person to reflect that it was brought about by unavoidable necessity on our part & has been conducted with a prudence & moderation becoming the wisest & best of men

With the independency of the American States a new era in politics has commenced. Every consideration respecting the propriety or impropriety of a separation from Britain is now entirely out of the question, & we have now nothing more to do with the King & people of England than we have with the King & people of France Spain or Portugal. ——— No people under heaven were ever favoured with a fairer opportunity of laying a sure foundation for future grandeur & happiness than we. The plan of Government established in most states & kingdoms of the world has been the effect of chance or necessity, ours of sober reason & cool deliberation; our future happiness or misery therefore as a people will depend entirely upon ourselves. ———

If actuated by principles of virtue & genuine patriotism, we make the welfare of our Country the sole end & aim of all our Actions; — If we entrust none but persons of abilities & integrity with the management of our public affairs; — If we carefully guard against corruption & undue influence in the several departments of Government; — If we are steady & zealous in putting the Laws in strict execution, the spirit & principles of our new Constitution, which we have just now heard read, may be preserved for a long time; but if faction & party spirit, the destruction of popular governments, take place, anarchy & confusion will soon ensue & we shall either fall an easy prey to a foreign enemy, or some factious & aspiring Demagogue possessed of popular talents & shining qualities, a Julius Cæsar or an Oliver Cromwell will spring up amongst ourselves, who, taking advantage of our political animosities, will lay violent hands on the Government & sacrifice the liberties of his country to his own ambitious & domineering humour! —— God grant that neither of these

may ever be the unhappy fate of this or any other of the United States. To prevent which while we are striving to defend ourselves against the lawless encroachments of a foreign & unnatural enemy, let us not neglect to keep a strict & Jealous eye over own internal police & constitution. Let the fate of Greece, Rome, Carthage, Spain & Great Britain warn us of our danger; & the loss of liberty in all those states for want of timely guarding against the introduction of Tyranny & Usurpation be a standing admonition to us to avoid the rock on which they have all Shipwrecked. — Let us as honest Citizens & sincere lovers of our Country exert ourselves in the defence of our State & in support of our new Constitution; but while we strive to vindicate the glorious cause of Liberty on the one hand, let us on the other hand carefully guard against running into the contrary extreme of disorder & licentiousness.

In our present situation engaged in a bloody & dangerous War with the power of Great Britain for the defence of our lives, our liberties, our property & every thing that is dear & valuable, every member of this State who enjoys the benefits of its civil government is absolutely bound by the immutable Law of self-preservation, the Laws of God and of Society to assist in protecting & defending it. This is so plain & self-evident a proposition that I flatter myself there is not a single person here present so thoughtless & inconsiderate as not to make it the rule of his conduct on all occasions & consequently at this time of public danger, will be extremely careful, not to entrust any person with the management of our public affairs who has not by his vigilance & activity in the cause of Liberty proved himself to be a true friend to his Country. The success of our present glorious

struggle wholly depends upon this single circumstance. For though the situation & extent of the United States & our numberless internal resources are sufficient to enable us to bid defiance to all Europe, yet should we be so infatuated, while the bayonet is pointed at our Breasts, as to entrust the defence of our State to persons whose principles either religious or political will not suffer them to lift a hand even to save their own lives; should we be so careless about our own safety at the ensuing Election as to entrust the raising equipping & maintaining of our Armies to persons whose conduct discovers them to be enemies to the State, or whose conciences will not permit them to discharge the trust reposed in them by their constituents our ruin will inevitably follow. — It is impossible for ~~a person~~ possessed of the spirit of a man who is a friend to the United States & whose conscience does not furnish him with an excuse to stand by

an Idle spectator while his Country is struggling and bleeding in her own necessary defence, all such inactive persons therefore ought to be shunned as enemies or despised as cowards. And as I have reason to believe that many who plead Conscience as an excuse are sincere in their pretentions, & as every one's Conscience ought to be free from restraint, this single consideration should induce us to avoid forcing such into any of the departments of government. For to put such persons, particularly at this time, in places of public trust is actually to deprive them of liberty of Conscience, for we thereby compel them either to betray the trust reposed in them which is a horrid crime or to act contrary to the dictates of their own Consciences which is equally criminal, so that act as they will they must unavoidably suffer ~~Persecution~~ on account of their religion, which God Grant may never be the case with a single person throughout the United states of America. Besides if we connected only

our own safety it is plain that to entrust the affairs of our Government at this juncture to such people is as dangerous as to entrust the management of a ship in a violent storm to an Infant or an Ideot

As a friend to my Country & a lover of liberty I thought it my duty to address you on this occasion, & having now as a faithful member of Society ~~watchman~~ discharged my duty I shall leave you to the exercise of your own Judgments & the dictates of your Consciences & conclude with a request that you would conduct yourselves this day in such a manner as to convince the world that your abhorrance of the cruel & bloody minded Nero of Britain & his despicable minions of Tyranny & Oppression arises from sober reason and reflexion & not from the mere impulse of blind passion & prejudice; and while we rejoice in being thus formally emancipated from our haughty & imperious taskmasters, let us remember that the final termination of this grand event is not likely to be brought about without shedding the blood of many of our dear friends & countrymen.

Address to the Com:ee & Militia

A Short

Valedictory Address

To Capt. Bloomfield's Company

of Continental Forces

Delivered the Evening before they Marched

March 26th 1776

To Joseph Bloomfield Esqr. Capt.

And

To the other Officers of the first Company of Continental Forces belonging to the third New-Jersey Battalion, raised in Cumberland County,

This short & imperfect address, as a small token of his zeal for the cause of liberty & respect for you & the Company under your command, is humbly inscribed

By

The Author

Friends, Countrymen, & Soldiers-

As most of you were born and brought up in this place with me, I feel my=self greatly interested in your welfare & success. — Permit me then, my dear friends, to take my serious <u>farewell</u> of you, with a short address.

Words cannot express the satisfaction I feel, on seeing such a number of respectable persons, voluntarily sacrificing their ease & present Interest, for the sake of serving their country; & generously offering, at this critical juncture, to hazard their lives on the high places of the field, in order to defend those rights & privileges, which our cruel and unnatural Enemies, are endeavouring to wrest from us, with the point of their Bayonetts. — The Sun, my friends, never shone on a contest more just, nor does the History of mankind afford a single instance of a people engaged in a cause more important, than that in which you are now engaged. Greece, Italy, Holland, Switzerland, & even Great Britain herself, (now our bloody foe) have fought & bled in the cause of liberty. But what are

any, or what are all those countries united? They are little more, in comparison to these American Colonies, than this County of Cumberland is, to the whole province of New Jersey. In short, the fate of millions, of a whole continent of people, depends on the event of the present unhappy dispute. And since the irrevocable blow is struck, and our adversaries have left the merits of their cause to the decision of the Sword, nothing but a resolute & manly resistance, can save our devoted Land, from inevitable ruin. Go on then, my brave friends, in the glorious cause you have undertaken; let no difficulties however great; let no obstacles however discouraging, hinder you from persisting in what you have begun. — As the military life you are now entering upon is new to most of you, give me leave to recommend it to you, as my parting advice, to live sober, temperate, & regular, & carefully guard against all those vices & irregularities, that are too common in Camps & Armies, particularly profane swearing and the excessive use of spirituous liquor. These will injure your health, blast your reputation, &

unfit you for the service of your country. —
Should you be called into the field of Action, it is
more than probable, that some of you will loose your
lives in Battle. For your comfort & encouragement
I would remind you, that, should it be the fate of any
of you to fall there, you will die gloriously; you
will expire in the defence of your country, & die suffer martyrdom
in the cause of liberty. — Remember the illustrious Hampden
who fell in the cause of liberty in the cruel & arbitrary
reign of Charles the 1st. Remember Dr. Warren, the
Hampden of America, who fell at the Battle on
Bunker's Hill, in the still more cruel & arbitrary reign
of George the 3d. Remember the brave General
Montgomery, the spirited McPherson, & the gallant
Capt Cheeseman & many other of our brave countrymen
(as well soldiers as officers) who have boldly sacrificed
their lives, in the glorious cause of liberty, in which
you are now engaged. Imitate their noble
example. Let the same patriotic spirit that
glowed in their breasts, animate yours also. Ascend
the summit of military honour, by acts of bravery
& heroism like theirs. Let not the faithful
pages of some future historian, be sullied

with the recital of a single cowardly or in-
-glorious action, which any of you may be
guilty of; but may you conduct so, as to gain
immortal honor to yourselves, & be a credit to
the place to which you belong. May you
all serve your country with courage & fidelity.
May you go forth, to oppose your cruel enemy,
in the name of "the Lord of Hosts, the God of
Armies". Trusting in him, may you always
prove victorious. May he preserve you in
safety, in the midst of the greatest danger.
And, having by your valour & activity, pro-
-cured peace & tranquility to your oppressed
& bleeding country, may you all return home
to your friends, loaded with trophies of
victory, & crowned with wreaths of unfading
laurels. —— May you then all prove
virtuous & useful citizens, until you have
compleated the measure of your days.

And

And, having faithfully served your Country in your day & generation, according to the will of Heaven, may you all die like Christians. — With these my sincere wishes, & ardent prayers, for your success, welfare, & safe return home, I now take my leave of you; and with the feelings of humanity, & affection of a friend, I bid you one and all — Farewell!

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